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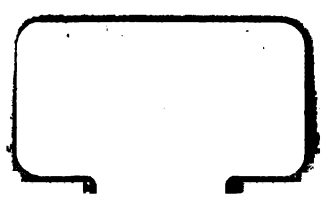

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TRANSACTIONS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

VOL. XXX

FOR THE YEAR 1917

Edited by E. GUSTAV ZINKE, M.D., F.A.C.S.
Cincinnati

YORK
THE MAPLE PRESS
1918

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AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

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NOTE.

The Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

DR. E. GUSTAV ZINKE, *Secretary*,
4 W. SEVENTH AVENUE, CINCINNATI.

[Minutes and discussions stenographically reported by WILLIAM WHITFORD, Chicago, Ill.]

—ERRATA—

Dr. Marvel's paper, page 287, and the IN MEMORIAM of Dr. Freeland, by Charles B. Schildecker, page 342-a have been omitted in the Index.

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CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

TOGETHER WITH

MINUTES OF THE THIRTIETH ANNUAL MEETING

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AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, Corresponding Fellows, and Senior Fellows.

The Ordinary Fellows shall not exceed one hundred and fifty in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting, by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

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Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council and elected by the Association.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual TRANSACTIONS.

They shall pay an annual fee of five dollars.

SENIOR FELLOWS.

Senior Fellows shall be nominated by the Executive Council, and elected by the Association as provided for in the election of Honorary Fellows, and they shall enjoy the same privileges as are accorded Corresponding Fellows.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and six Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The first five officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

"At the election next succeeding the adoption of these laws, the full number of Executive Councillors shall be elected; two for a term of three years, two for a term of two years, and two for a term of one year.

"At every subsequent election two Councillors shall be elected for a term of three years, and shall continue in office until their successors shall have been elected and shall have qualified."[1]

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall

[1] Amendment adopted September 21, 1898

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be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting: *provided*, that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding: and *provided, further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

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AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence, one of the Vice-Presidents shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the TRANSACTIONS under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

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EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A. M.
   - *a.* Reports of Committees on Scientific Questions.
   - *b.* Reading of Papers and Discussion of the same.
2. One business Meeting shall be held at half-past nine o'clock A. M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's record shall be read; the Treasurer's accounts submitted; the reports of Committees on other than scientific subjects offered; and all miscellaneous business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

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All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow, on admission, shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay, *in advance* (*i.e.*, at the beginning of each fiscal year) the sum of twenty dollars annually thereafter.

[A fiscal year includes the period of time between the first day of one annual meeting and the first day of the next.]

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive, annually, a draft from the President, drawn on the Treasurer, for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for five consecutive years, unless he offer a satisfactory excuse, shall be dropped from fellowship, upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

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AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

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OFFICERS FOR 1917–1918

PRESIDENT

ALBERT GOLDSPOHN, Chicago

VICE-PRESIDENTS

WM. SEAMAN BAINBRIDGE, New York
ARTHUR T. JONES, Providence

SECRETARY

E. GUSTAV ZINKE, Cincinnati

TREASURER

HERMAN E. HAYD, Buffalo

EXECUTIVE COUNCIL

MAGNUS A. TATE, Cincinnati
CHARLES L. BONIFIELD, Cincinnati
HUGO O. PANTZER, Indianapolis
ORANGE G. PFAFF, Indianapolis
AARON B. MILLER, Syracuse
JOHN W. KEEFE, Providence

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LIST OF OFFICERS.

From the Organization to the Present.

	President.	*Vice-Presidents.*	*Secretary.*	*Treasurer.*
1888.	Taylor, Wm. H.	Montgomery, E. E. Carstens, J. H.	Potter, Wm. W.	Werder, X. O.
1889.	Montgomery, E. E.	Myers, W. H. Banta, R. L.	Potter, Wm. W.	Werder, X. O.
1890.	Wright, A. H.	Rohé, G. H. Hall, R. B.	Potter, Wm. W.	Werder, X. O.
1891.	Vander Veer, A.	Hill, H. E. Morris, R. T.	Potter, Wm. W.	Werder, X. O.
1892.	McMurtry, L. S.	Ill, Ed. J. Longyear, H. W.	Potter, Wm. W.	Werder, X. O.
1893.	Rohé, Geo. H.	Manton, W. P. Hulbert, Geo. F.	Potter, Wm. W.	Werder, X. O.
1894.	Carstens, J. H.	Davis, W. E. B. Howitt, H.	Potter, Wm. W.	Werder, X. O.
1895.	Price, Joseph	Cordier, Al. H. Peck, G. S.	Potter, Wm. W.	Werder, X. O.
1896.	Ross, J. F. W.	Johnston, G. B. Sexton, J. C.	Potter, Wm. W.	Werder, X. O.
1897.	Reed, C. A. L.	Douglas, R. Dorsett, W. B.	Potter, Wm. W.	Werder, X. O.
1898.	Ill, Edward J.	Ricketts, Ed. Miller, A. B.	Potter, Wm. W.	Werder, X. O.
1899.	Hall, R. B.	Dunning, L. H. Crofford, T. J.	Potter, Wm. W.	Werder, X. O.
1900.	Davis, W. E. B.	Walker, Ed. Goldspohn, A.	Potter, Wm. W.	Werder, X. O.
1901.	Ricketts, E.	Cumston, C. G. Porter, M. F.	Potter, Wm. W.	Werder, X. O.
1902.	Dunning, L. H.	Rosenwasser, M. Hayd, H. E.	Potter, Wm. W.	Werder, X. O.
1903.	Dorsett, W. B.	Miller, A. B. Haggard, W. D.	Potter, Wm. W.	Werder, X. O.
1904.	Longyear H. W.	Gilliam, D. T. Brown, J. Y.	Potter, Wm. W.	Werder, X. O.
1905.	Brown, J. Y.	West, J. N. Simpson, F. F.	Potter, Wm. W.	Werder, X. O.
1906.	Morris, R. T.	Crile, G. W. Bonifield, C. L.	Potter, Wm. W.	Werder, X. O.
1907.	Zinke, E. G.	Keefe, J. W. Sellman, W. A. B.	Potter, Wm. W.	Werder, X. O.
1908.	Humiston, Wm. H.	Sadlier, J. E. Davis, J. D. S.	Potter, Wm. W.	Werder, X. O.
1909.	Miller, A. B.	Smith, C. N. Huggins, R. R.	Potter, Wm. W.	Werder, X. O.
1910.	Hayd, H. E.	Schwarz, H. Morris, L. C.	Potter, Wm. W.	Werder, X. O
1911.	Werder, X. O.	Frank, L. Tate, M. A.	Zinke, E. G.	Hayd, H. E.
1912.	Porter, M. F.	Smith, C. N. Sadlier, J. E.	Zinke, E. G.	Hayd, H. E.
1913	Smith, C. N.	Pantzer, H. O. Branham, J. H.	Zinke, E. G.	Hayd, H. E.
1914.	Bonifield, C. L.	Davis, A. B. Sanes, K. I.	Zinke, E. G.	Hayd, H. E.
1915.	Pantzer, H. O.	Dickinson, G. K. Pfaff, O. G.	Zinke, E, G.	Hayd, H. E.
1916.	Keefe, J. W.	Ill, Chas. L. Pfaff, Orange G.	Zinke, E. G.	Hayd, H. E.
1917.	Goldspohn, A.	Bainbridge, W. S. Jones, A. T.	Zinke, E. G.	Hayd, H. E.

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HONORARY FELLOWS.

1899.—BALLANTYNE, JOHN WILLIAM, M.D., F.R.C.P.E., F.R.S. Edin. Lecturer on Midwifery and Gynecology, School of Medicine of the Royal Colleges, Surgeons' Hall, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh; formerly President of the Edinburgh Obstetrical Society; Examiner in Midwifery in the University of Edinburgh; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society. 19 Rothesay Terrace, Edinburgh, Scotland.

1889.—BANTOCK, GEORGE GRANVILLE, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. Broad Meadow, King's Norton, Birmingham, England.

1889.—BARBOUR, SIR A. H. FREELAND, M.A., B.S.C., M.D. F.R.C.P. Ed., F.R.S. Ed. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies, and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 4 Charlotte Square, Edinburgh, Scotland.

1889.—CROOM, SIR J. HALLIDAY, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Professor of Midwifery in the University of Edinburgh; Consulting Physician to the Royal Infirmary; Physician to the Royal Maternity Hospital; late President of the Royal College of Surgeons, Edinburgh. 25 Charlotte Square, Edinburgh, Scotland.

1891.—FERNANDEZ, JUAN SANTOS, M.D. Prado, No. 105, Havana, Cuba.

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1889.—FREUND, WILLIAM ALEXANDER, M.D. Emeritus Professor and Director of the Clinic for Diseases of Women in the University of Strassburg. Kleiststrasse 9, Berlin W., Germany.

1912.—GILLIAM, DAVID TOD, M.D. Emeritus Professor of Gynecology, Starling-Ohio Medical College; Gynecologist to St. Anthony Hospital; Member of the American Medical Association, Ohio State Medical Association, Columbus Academy of Medicine; Honorary Member of the Northwestern Ohio Medical Association; Ex-president, Franklin County Medical Society; *Vice-president*, 1905. 333 East State Street, Columbus, Ohio.

1894.—JACOBS, CHARLES, M.D. Professor of the Faculty of Medicine of Brussels; Secretary-General of the Permanent Committee of the Periodic International Congress of Gynecology and Obstetrics; Honorary President of the Belgian Society of Gynecology and Obstetrics; Honorary Fellow of the Gynecological Societies of New York and Chicago; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Gynecological Society of Paris; Surgeon to the Brussels Polyclinic. 53 Boulevard de Waterloo, Brussels, Belgium.

1905.—MCGRAW, THEODORE A., M.D. 73 Cass Street, Detroit, Mich.

1890.—MARTIN, AUGUST, M.D. Emeritus Professor of Gynecology in the University of Greifswald. Keithstrasse 14, Berlin W. 62, Germany.

1897.—MATHEWS, JOSEPH MCDOWELL, M.D. Professor of Diseases of the Rectum and Clinical Surgery, Hospital College of Medicine; President of the Kentucky State Board of Health; President American Medical Association, 1899; 404 Consolidated Realty Bldg., Los Angeles, Cal.

1910.—DE OTT, DIMITRIJ OSKAROVIC. Professor of Obstetrics and Gynecology in the Royal Pavloona Clinical Institute of St. Petersburg; President of the Fifth International Congress of Obstetrics and Gynecology. Wassily Ostrow, University Place, Petrograd, Russia.

1891.—PIETRANERA, E., M.D. Professor of Obstetrics in the Medical Department of the National University; Director of the Maternity Branch of the Clinical Hospital. 2711 Calle Rio Adaria, Buenos Ayres, Argentine Republic, S. A.

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1889.—SCHULTZE, BERNHARD SIGMUND, M.D. Professor of Gynecology; Director of the Lying-In Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1896.—STERNBERG, GEORGE MILLER, A.M., M.D., LL.D. Surgeon General U. S. Army (Retired). 2005 Massachusetts Avenue, Washington, D. C.

1888.—WILLIAMS, SIR JOHN, BART., M.D., F.R.C.P. Blaen Llynant, Aberystwyth, Cardiganshire, Wales.

Total, sixteen Honorary Fellows.

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HONORARY FELLOWS, DECEASED.

1892.—Boisliniere, L. Ch., A.B., M.D., L.L.D., Saint Louis, Mo., 1896.

1890.—Championniere, Just. Lucas, M.D., Paris, France, 1913.

1889.—Charpentier, Louis Arthur Alphonse, M.D., Paris, France, 1899.

1888.—Cordes, Auguste E., M.D., Geneva, Switzerland, 1914.

1890.—Corson, Hiram, M.D., Plymouth Meeting, Pa., 1896.

1889.—Dunlap, Alexander, A.M., M.D., Springfield, O., 1894.

1888.—Edis, Arthur Wellesley, M.D., Lond. F.R.C.S., M.R.S.C.S., London, England, 1893.

1889.—Eklund, Abraham Fredrik, M.D., Stockholm, Sweden, 1898.

1891.—Fisher, George Jackson, A.M., M.D., Sing Sing, N. Y., 1893.

1896.—Gaston, James McFadden, A.M., M.D., Atlanta, Ga., 1903.

1892.—Green, Traill, M.D., LL.D., Easton, Pa., 1897.

1889.—Keith, Thomas, M.D., London, England, 1896.

1889.—Leopold, G., M.D., Dresden, Germany, 1913.

1894.—Maclein, Donald, M.D., Detroit, Mich., 1903.

1895.—Mastin, Claudius Henry, M.D., LL.D., Mobile, Ala. 1898.

1891.—Moses, Gratz Ashe, M.D., Saint Louis, Mo., 1901.

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1905.—MYERS, WILLIAM HERSCHEL, M.D., Fort Wayne, Ind., 1907.

1889.—NICOLAYSEN, JULIUS, M.D., Christiania, Norway, 1915.

1889.—SAENGER, MAX, M.D., Prague, 1903.

1890.—SAVAGE, THOMAS, M.D., F.R.C.S. Eng., Birmingham, England, 1907.

1890—SEGOND, PAUL, M.D., Paris, France, 1913.

1899.—SINCLAIR, SIR WILLIAM JAPP, A.M., M.D., Manchester, England, 1913.

1894.—SLAVIANSKY, KRONID, M.D., St. Petersburg, Russia, 1898.

1888.—SMITH, J. GREIG, M.A., C.M., M.B., F.R.S.E., Bristol, England, 1897.

1899.—STORRS, MELANCTHON, A.M., M.D., Hartford, Conn., 1900.

1888.—TAIT, LAWSON, M.D., LL.D., F.R.C.S.E., Birmingham, England, 1899.

1905.—TAYLOR, WILLIAM HENRY, M.D., *President*, 1888–1889, Cincinnati, Ohio, 1910.

1900.—THORNTON, J. KNOWSLEY, M.B., M.C., Cambridge, England, 1904.

1901.—WEBER, GUSTAV C. E., M.D., LL.D., Willoughby, Ohio, 1912.

1889.—VON WINCKEL, F.M.D., Munich, Germany, 1912.

1905.—WYMAN, WALTER, M.D., Washington, D.C., 1911.

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CORRESPONDING FELLOWS.

1899.—BEUTTNER, OSCAR, M.D. Professor of the Faculty of Medicine. 2 Place de la Fasterie, Geneva, Switzerland.

1903.—CROZEL, G., M.D. Professor Libre of Gynecology. Collonges au Mont d'Or, Chemin des Celestine, A Oullins, France.

1914.—DAS, KEDARNATH, M.D. Professor of Midwifery and Gynecology, Campbell Medical School; Obstetrician and Gynecologist, Campbell Hospital, Calcutta; Examiner in Midwifery and Gynecology, Calcutta University; Examiner in Midwifery, College of Physicians and Surgeons, Bengal; Fellow, Royal Society of Medicine, London. 22, Bethune Row, Calcutta.

1903.—ELLIS, GUILHERME, M.D. Chief Surgeon to the Real Sociedade de Beneficencia Portuguese Hospital. 6 Rua Aurora, S. Paulo, Brazil, S. A.

1891.—GRIFFIN, HERBERT SPOHN, B.A., M.B., M.D., C.M. Surgeon to St. Joseph's Hospital; Gynecologist to Hamilton City Hospital; 157 Main Street, Hamilton, Ontario, Canada.

1914.—HERTOGHE, EUGENE, M.D. Antwerp, Belgium.

1903.—LANE, HORACE MANLEY, M.D., LL.D. President of Mackenzie College, S. Paulo, Brazil. 184 Rua da Consolacao, S. Paulo, Brazil, S. A.

1891.—MACHELL, HENRY THOMAS, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Women's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

1898.—WRIGHT, ADAM HENRY, B.A., M.D. Univ. Toronto, M.R.C.S., Eng. Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital, *President*, 1891. 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, nine Corresponding Fellows.

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SENIOR FELLOWS.

1913.—BLUME, FREDERICK, M.D. Gynecologist to the Allegheny General Hospital and Pittsburgh Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to the Mercy Hospital; President of the Pittsburgh Obstetrical Society, 1892. Office, Jenkins Building, Pittsburgh, Pa.

1911.—LINCOLN, WALTER RODMAN, B.A., M.D. Lecturer on Gynecology, College of Physicians and Surgeons of Cleveland. Lennox Building, corner Erie Street and Euclid Avenue, Cleveland, Ohio.

1915.—LYONS, JOHN ALEXANDER, M.D., F.A.C.S. Instructor in Gynecology at the Post-Graduate Medical School; Gynecologist and Lecturer to Nurses at the Chicago Hospital. Residence, 6348 Anthony Avenue; Office, 6932 Calumet Avenue; Chicago, Ill.

1913.—STAMM, MARTIN, M.D. Professor of Operative and Clinical Surgery in the College of Physicians and Surgeons, Cleveland. 316 Napoleon Street, Fremont, Ohio.

1917.—SUTCLIFFE, JOHN ASBURY, A.M., M.D. Professor of Genitourinary Surgery, Indiana School of Medicine; Consulting Surgeon to St. Vincent's Infirmary; Consultant in Genito-urinary Diseases to the City Hospital and to the Protestant Deaconess' Hospital. Residence, 1121 Central Avenue; Office, 155 East Market Street, Indianapolis, Ind.

1917.—HOWITT, HENRY, M.D. M.R.C.S. Eng., F.A.C.S. Senior Surgeon to the Guelph General and St. Joseph's Hospitals, Guelph. Member of the British, Canadian and Ontario Medical Associations. President of the Guelph Association. Vice-president, 1895. 221 Woolwich St., Guelph, Ontario, Canada.

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ORDINARY FELLOWS.

1902.—ABRAMS, EDWARD THOMAS, A.M., M.D., F.A.C.S. Consulting Surgeon to the Lake Superior General Hospital; Member of the Michigan State Medical Society; Member of the American Medical Association. Surgeon to St. Joseph's Hospital. Dollar Bay, Mich.

1895.—BACON, JOSEPH BARNES, M.D., F.A.C.S. Professor of Rectal Diseases at the Post-Graduate Medical School; Instructor in Clinical Surgery in the Medical Department of Northwestern University, Chicago. Macomb, Ill.

1911.—BAINBRIDGE, WILLIAM SEAMAN, M.D., A.M., LL.D., M.S., C.M., Sc.D. Adjunct Professor, New York Post-Graduate Medical School, 1902–6; Professor New York Polyclinic Medical School and Hospital since 1906; Surgeon, New York Skin and Cancer Hospital; Attending Surgeon, New York City Children's Hospitals and Schools; Consulting Surgeon, Manhattan State Hospital, New York Home for Dependent Crippled Children, College of Dental and Oral Surgery of New York and Tarrytown Hospital, Tarrytown, N. Y.; Consulting Gynecologist, St. Andrew's Hospital (New York) and St. Mary's Hospital, Jamaica, Long Island and the Ossining Hospital, Ossining, N. Y.; Lt. Com., M.R.F., U.S. Navy; Honorary President International Congress for Study of Tumors and Cancers, Heidelberg, Germany, 1906. 34 Gramercy Place, New York City.

1895.—BALDWIN, JAMES FAIRCHILD, A.M., M.D., F.A.C.S. Surgeon to Grant Hospital, 125 South Grant Avenue. Residence, 405 E. Town Street, Columbus, Ohio.

1903.—BANDLER, SAMUEL WYLLIS, M.D., F.A.C.S. Instructor in Gynecology in the New York Post-Graduate Medical School and Hospital; Adjunct Gynecologist to the Beth Israel Hospital. 134 West Eighty-seventh Street, New York, N. Y.

1911.—BARRETT, CHANNING W., M.D., F.A.C.S. Professor of Gynecology and Head of Division of Gynecology, University of

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Illinois Medical School, Gynecologists and Head of Department of Gynecology, Cook County Hospital. 561 Stratford Pl. Chicago, Ill.

1913.—BAUGHMAN, GREER, M.D. Professor of Obstetrics, Medical College of Virginia; Visiting Obstetrician to the Stuart Circle Hospital and to the Memorial Hospital, Richmond, Virginia; Member of the Southern Surgical and Gynecological Association; Vice-President of the Medical Society of Virginia, 1905; Member of the Tri-State Medical Association of Virginia and the Carolinas; Richmond Academy of Medicine and Surgery and the American Medical Society. Residence and Office, 26 North Laurel St., Richmond, Virginia.

1907.—BELL, JOHN NORVAL, M.D., F.A.C.S. Associate Professor of Obstetrics, Detroit College of Medicine and Surgery; Attending Obstetrician, Harper Hospital; Consultant in Obstetrics, Woman's Hospital. Residence, 203 Pallister Avenue; Office, 1149 David Whitney Bldg., Detroit, Mich.

1914.—BILL, ARTHUR HOLBROOK, A.M., M.D. Associate Professor of Obstetrics, School of Medicine, Western Reserve University; Visiting Obstetrician to the Maternity Hospital of Cleveland; Visiting Obstetrician and Head of the Department, Cleveland City Hospital; Obstetrician in charge of Out-patient Obstetrical Department, Western Reserve University. Residence, 2083 East 96th St.; Office, 1021 Prospect Ave., Cleveland, O.

1900.—BONIFIELD, CHARLES LYBRAND, M.D. Professor of Gynecology, Medical Department of the University of Cincinnati. Member and Ex-President, Cincinnati Academy of Medicine, Cincinnati Obstetrical Society, Ohio State Medical Association and Ohio Clinical Association. Member of American Medical Association, Southern Surgical and Gynecological Society. *President*, 1914. Residence, 1763 East McMillan Street, Office, 409 Broadway, Cincinnati, Ohio.

1896.—BOSHER, LEWIS C., M.D., F.A.C.S. Professor of Practice of Surgery and Clinical Surgery, Medical College of Virginia; Visiting Surgeon, Memorial Hospital, Richmond. 422 East Franklin Street, Richmond, Va.

Founder.—BOYD, JAMES PETER, A.M., M.D. Emeritus Professor of Obstetrics and Diseases of Children in the Albany Medical College; Consulting Obstetrician and Gynecologist to the Albany Hos-

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pital; Fellow of the British Gynecological Society; Fellow of the Royal Society of Medicine. 152 Washington Avenue, Albany, N. Y.

1889.—BRANHAM, JOSEPH H., M.D. Professor of Surgery in the Maryland Medical College; Surgeon to the Franklin Square Hospital. 2200 Eutaw Place, corner Ninth Avenue, Baltimore, Md.

1912.—BROWN, GEORGE VAN AMBER, M.D. Gynecologist, Cystoscopist, German Polyclinic; Gynecologist, Providence Hospital. Residence, 55 Gladstone Ave.; Office, 919–922 J. Henry Smith Bldg., Cor. Griswold and State Sts., Detroit, Michigan.

1894.—BROWN, JOHN YOUNG, M.D., F.A.C.S. Professor of Clinical Surgery in Saint Louis University; Chief Surgeon to St. John's Hospital; President of the Mississippi Valley Medical Association, 1898; *Vice-president*, 1905; *President*, 1906; *Executive Council*, 1907–8. Residence, 303 North Grand Avenue; Office, 612 Metropolitan Building, Saint Louis, Mo.

1914.—BROWN, WILLIAM MORTIMER, M.D., F.A.C.S. Obstetrician to Rochester General Hospital. Residence, 1776 East Ave.; Office, 272 Alexander St., Rochester, N. Y.

1908.—BUTEAU, SAMUEL H., M.D., F.A.C.S. Former member of California State Board of Medical Examiners; formerly Visiting Surgeon to Almeda County Hospital. Residence, 1052 Telegraph Avenue; Office, 1155 Broadway, Oakland, Cal.

Founder.—CARSTENS, J. HENRY, M.D., F.A.C.S. Professor Abdominal and Pelvic Surgery, Detroit College of Medicine and Surgery, President of the Faculty. Consulting Gynecologist to the Harper Hospital; Cons. Obstetrician to the Woman's Hospital; Consulting Obstetrician to the House of Providence; Ex-President Michigan State Medical Society; Ex-President Mississippi Valley Medical Society; Ex-Chairman Section of Obstetrics, A. M. A.; Member Royal Society of Medicine; Member American College of Surgeons; etc., etc. President of the Detroit Gynecological Society, 1892. *Vice-president*, 1888–89; *President*, 1895; *Executive Council*, 1896–98. 1447 David Whitney Building, Detroit, Mich.

1914.—CHANDLER, GEORGE, M.D., F.A.C.S. Surgeon to the Kingston City Hospital. Residence and Office, 11 East Chestnut St., Kingston, N. Y.

1915.—CLARK, EDMUND DOUGAN, M.D., F.A.C.S. Professor of Surgery and Secretary of the Faculty, Indiana University School of

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Medicine. Residence, 1236 New Jersey Street; Office, Hume-Mansur Building, Indianapolis, Ind.

1901.—CRILE, GEORGE W., A.M., M.D., F.A.C.S., Professor of Surgery, Western Reserve Medical College; Visiting Surgeon to Lakeside Hospital. *Vive-president*, 1907. Residence, 2620 Derbyshire Road, Cleveland Heights. Office, Osborn Bldg., Cleveland, Ohio.

1905.—CROSSEN, HARRY STURGEON, M.D., F.A.C.S. Clinical Professor of Gynecology in Washington University; Gynecologist to Washington University Hospital; Associate Gynecologist to Mullanphy Hospital; Consulting Gynecologist to Bethesda, City and Female Hospitals. Residence, 4477 Delmar Avenue; Office, 310 Metropolitan Building, Saint Louis, Mo.

1912.—CROTTI, ANDRE, M.D., F.A.C.S. Professor of Clinical Surgery, Ohio State University; Surgeon to Grant Hospital, Children's Hospital and to St. Francis Hospital. Residence, 1728 E. Broad Street; Office, 151 E. Broad Street, Columbus, Ohio.

1912.—DARNALL, WILLIAM EDGAR, A.B., M.D., F.A.C.S. Gynecologist, Atlantic City Hospital; Consulting Surgeon to North American Children's Sanitarium for the Treatment of Surgical Tuberculosis, and Home for Incurables, Longport, New Jersey. *Vice-president* American Medical Association, 1914. Residence and Office, 1704 Pacific Ave., Atlantic City, N. J.

1911.—DAVIS, ASA BARNES, M.D., F.A.C.S. Attending Surgeon of the Society of the Lying-in Hospital of the City of New York; Consulting Gynecologist to the Vassar Brothers' Hospital, Poughkeepsie, N. Y. 42 E. 35th Street, New York.

1915.—DAVIS, JAMES ETHELBERT, M.D. Attending Surgeon, Providence Hospital, Detroit; Chief of Staff, Salvation Army Maternity Hospital, Detroit; Associate Professor of Surgery, Detroit College of Medicine and Surgery. Residence, 831 West Fort Street; Office, 1229 David Whitney Building, Detroit, Mich.

1903.—DAVIS, JOHN D. S., M.D., LL.D., F.A.C.S. Professor of Surgery in the Post-Graduate School of Medicine of the University of Alabama; Surgeon to Hillman Hospital; Surgeon to Davis Infirmary; ex-President Jefferson County Medical Society; *Vice-president*, 1905; *Vice-president*, 1909. 2031 Avenue G, Birmingham, Ala.

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1910.—DICE, WILLIAM GORDON, A.B., M.D. Obstetrician to Flower Hospital. 240 Michigan Street, Toledo, Ohio.

1909.—DICKINSON, GORDON K., M.D., F.A.C.S. Surgeon to the City and Christ Hospitals; Consulting Surgeon to Bayonne Hospital. Consulting Surgeon, Stumpf Memorial Hospital, Kearny, N. J. 280 Montgomery Street, Jersey City, N. J.

1899.—EASTMAN, THOMAS BARKER, A.B., M.D., F.A.C.S. Professor of the Medical and Surgical Diseases of Women, Central College of Physicians and Surgeons; Gynecologist to the City Hospital, City Dispensary, and Central Free Dispensary. 309 Pennway Building, Indianapolis, Ind.

1904.—ELBRECHT, OSCAR H., PH.B., M.D., F.A.C.S. Formerly Superintendent and Surgeon in Charge, St. Louis Female Hospital; Visiting Surgeon, St. Louis City Hospital; Consulting Gynecologist, Missouri Pacific Hospital; Consulting Surgeon to St. Louis Maternity Hospital and former Chief of Staff; Consulting Surgeon, Bethesda Hospital; Member of Southern Surgical and Gynecological Association. Residence, Buckingham Hotel; Office, 423 Metropolitan Building, St. Louis, Mo.

1906.—ERDMANN, JOHN FREDERICK, M.D., F.A.C.S. Professor of Surgery, N. Y. Post-Graduate Hospital and Medical School; Attending Surgeon to Gouverneur Hospital and Post-Graduate Hospital; Consulting Surgeon to St. John's Riverside Hospital, Yonkers, N. Y.; Mt. Vernon General Hospital, Mt. Vernon, N. Y.; Greenwich General Hospital, Greenwich, Conn.; Nassau Hospital, Mineola, L. I. 60 West Fifty-second Street, New York, N. Y.

1911.—FINDLEY, PALMER, B.E., M.D., F.A.C.S. Professor of Gynecology, College of Medicine, University of Nebraska. 418 Brandeis Theater Building, Omaha, Neb.

1910.—FOSTER, CURTIS SMILEY, A.B., M.D., F.A.C.S. Gynecologist to the Western Pennsylvania Hospital, Pittsburgh. Residence, 5749 Ellsworth Avenue; Office, 308 Diamond Bank Building, Pittsburgh, Pa.

1903.—FRANK, LOUIS, M.D., F.A.C.S. Professor of Abdominal and Pelvic Surgery, Medical Department, University of Louisville;

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Surgeon Louisville City Hospital; Surgeon to John N. Norton Memorial Infirmary; President Mississippi Valley Medical Association, 1912; *Executive Council*, 1913. Residence, 1321 Fourth Ave.; Office, 400 The Atherton, Louisville, Kentucky.

1912.—FURNISS, HENRY DAWSON, M.D., F.A.C.S. Professor of Gynecology, New York Post-Graduate Hospital; Assistant Attending Gynecologist New York Post-Graduate Medical School and Hospital; Consulting Gynecologist, Volunteer Hospital; Consulting Gynecologist, New Rochelle Hospital; Consulting Gynecologist St. Agnes Hospital, White Plains, N. Y.; Fellow New York Academy of Medicine, New York Medico-Surgical Society, New York Obstetrical Society, New York State and County Medical Societies, American Medical Association, American Urological Society. Residence, 393 West End Ave.; Office, 375 West End Avenue, New York, N. Y.

1902.—GILLETTE, WILLIAM J., M.D. Professor of Abdominal Surgery and Gynecology in the Toledo Medical College; Surgeon to Robinwood Hospital. 1613 Jefferson Street, Toledo, Ohio.

1895.—GOLDSPOHN, ALBERT, M.S., M.D., F.A.C.S. Professor of Gynecology, Post-Graduate Medical School; Surgeon in Chief of Evangelical Deaconess Hospital. *Vice-president*, 1901. Residence, 2118, Office, 2120 Cleveland Avenue, Chicago, Ill.

1912.—GOODMAN, SYLVESTER JACOB, PH.G., M.D., F.A.C.S., CAPT. M.O.R.C. Surgeon and Obstetrician Grant Hospital; Lecturer of Obstetrics; Training School for Nurses, Grant Hospital; Consulting Surgeon, Actor's Fund of America, etc., etc. Residence, 1718 Franklin Ave., Office, 238 E. State Street, Columbus, Ohio.

1913.—HADDEN, DAVID, B.S., M.D., F.A.C.S. Residence, 6150 Mendocino Ave., Berkeley; Office, Oakland Bank of Savings Bldg., Oakland, Cal.

1900.—HAGGARD, WILLIAM DAVID, JR., M.D., F.A.C.S. Professor of Gynecology, Medical Department University of Tennessee; Professor of Gynecology and Abdominal Surgery, University of the South (Sewanee); Gynecologist to the Nashville City Hospital; President of the Nashville Academy of Medicine; Secretary of the Section on Diseases of Women and Obstetrics, American Medical Association, 1898; Fellow (and President) of the Southern Surgical

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and Gynecological Association; Member of the Alumni Association of the Woman's Hospital, N. Y. *Vice-president*, 1904. 148 Eighth Avenue, North, Nashville, Tenn.

1906.—HALL, JOSEPH ARDA, M.D., F.A.C.S. Clinical Assistant in Gynecology at the Miami Medical College, Cincinnati. 628 Elm Street, Cincinnati, Ohio.

1889.—HALL, RUFUS BARTLETT, A.M., M.D., F.A.C.S. Professor of Clinical Gynecology in the Ohio-Miami Medical College, Medical Department of University of Cincinnati; Gynecologist to the Cincinnati Hospital; Surgeon in charge of the Hall Hospital; Member of the British Medical Society; of the Southern Surgical and Gynecological Association; of the American Medical Association; of the Ohio State Medical Society (President, 1900); of the Cincinnati Academy of Medicine (President, 1909); of the Cincinnati Obstetrical Society (Ex-President). *Vice-president*, 1891; *President*, 1900; *Executive Council*, 1904–1909. Berkshire Building, 628 Elm Street, Cincinnati, Ohio.

1902.—HAMILTON, CHARLES SUMNER, A.B., M.D., F.A.C.S. Professor of the Principles of Surgery in Starling Medical College; Surgeon to Mt. Carmel and the Children's Hospitals. 142 South Garfield Street, Columbus, Ohio.

1910.—HARRAR, JAMES AITKEN, M.D., F.A.C.S. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence and Office, 108 East 64th Street, New York, N. Y.

1894.—HAYD, HERMAN EMIL, M.D., M.R.C.S. Eng., F.A.C.S. Surgeon to the German Deaconess Hospital; Surgeon to the German Hospital. *Vice-president*, 1903; *Executive Council*, 1908–1910; *President*, 1911. 493 Delaware Avenue, Buffalo, N. Y.

1908.—HEDGES, ELLIS W., A.B., M.D., F.A.C.S. Visiting Surgeon to Muhlenberg Hospital, Plainfield, N. J. 703 Watchung Avenue, Plainfield, N. J.

1910.—HILL, ISADORE LEON, A.B., M.D. Clinical Instructor of Obstetrics at Cornell University Medical College; Visiting Obstetrician to the Red Cross Hospital; Attending Obstetrician to Sydenham Hospital. 616 Madison Avenue, New York, N. Y.

1905.—HUGGINS, RALEIGH RUSSELL, M.D., F.A.C.S. Surgeon to St. Francis Hospital. *Vice-president*, 1910. 1018 Westinghouse Building, Pittsburgh, Pa.

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1895.—HUMISTON, WILLIAM HENRY, M.D. Clinical Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist in Chief to St. Vincent's Charity Hospital; Consulting Gynecologist to the City Hospital; President of the Ohio State Medical Society, 1898. *Executive Council*, 1902–1903, 1908, 1910–1911. *President*, 1909. Residence, 2041 East Eighty-ninth Street; Office, 536 Rose Building, Cleveland, Ohio.

1901.—ILL, CHARLES L., M.D., F.A.C.S. Surgeon to the German Hospital; Gynecologist to St. Michael's and Surgeon to St. Barnabas's Hospitals; Newark; Gynecologist to All Souls' Hospital, Morristown. 188 Clinton Avenue, Newark, N. J.

Founder.—ILL, EDWARD JOSEPH, M.D., F.A.C.S. Surgeon to the Woman's Hospital; Medical Director of St. Michael's Hospital; Gynecologist and Supervising Obstetrician to St. Barnabas's Hospital; Consulting Gynecologist to the German Hospital and the Bnoth Israel Hospital of Newark, N. J., to All Souls' Hospital, Morristown, N. J., and to the Mountain Side Hospital, Montclair, N. J.; Member of the Southern Surgical and Gynecological Association; Vice-president from New Jersey of the Pan-American Medical Congress of 1893; President of the Medical Society of the State of New Jersey, 1907. *Vice-president*, 1893; *President*, 1899; *Executive Council*, 1901–1903. 1002 Broad Street, Newark, N. J.

1909.—JACOBSON, JULIUS H., M.D., F.A.C.S. Professor of Gynecology and Clinical Surgery, Medical Department Toledo University; Surgeon to Lucas City Hospital; Gynecologist to St. Vincent's Hospital, Toledo. 2050 Franklin Street, Toledo, O.

1906.—JONAS, ERNST, M.D., F.A.C.S. Clinical Professor of Surgery in Washington University Medical School; Surgeon in Charge of the Surgical Clinic at the Washington University Hospital; Gynecologist to the St. Louis Jewish Hospital; Visiting Surgeon to St. Louis City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Martha Parsons Free Hospital for Children. Residence, 4495 Westminster Place; Office, 465 North Taylor Avenue, St. Louis, Mo.

1910.—JONES, ARTHUR THOMS, M.D., F.A.C.S. Visiting Surgeon to Memorial Hospital, Pawtucket, R. I. and to Rhode Island State Hospital for the Insane, Howard, R. I; Visiting Surgeon to

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St. Joseph's Hospital, Providence; and to Woonsocket Hospital, Woonsocket, R. I. Residence, 81 Elm Grove Avenue; Office, 131 Waterman St., Providence, R. I.

1902.—KEEFE, JOHN WILLIAM, M.D., L.L.D., F.A.C.S. Attending Surgeon to the Rhode Island Hospital and Providence City Hospital; Consulting Surgeon to the St. Joseph's Hospital, Providence Lying-In Hospital, Memorial Hospital, Pawtucket and Woonsocket Hospital. *Vice-president*, 1908. *Executive Council*, 1911. 262 Blackstone Boulevarde, Providence, R. I.

1910.—KENNEDY, JAMES W., M.D., F.A.C.S. Associate Gynecologist and Obstetrician to the Philadelphia Dispensary. 1409 Spruce Street, Philadelphia, Pa.

1911.—KING, JAMES E., M.D., F.A.C.S. Professor of Clinical Gynecology, Medical Department, University of Buffalo, New York; Attending Gynecologist, Buffalo General and Erie County Hospital and Good Samaritan Dispensary; Fellow Royal Society of Medicine, London, England; Fellow of Am. Gyn. Soc. 1248 Main Street, Buffalo, N. Y.

1908.—KIRCHNER, WALTER C. G., A.B., M.D., F.A.C.S. Formerly Superintendent and Surgeon in charge of the St. Louis City Hospital. Visiting Surgeon City Hospital, Consulting Surgeon St. John's Hospital. Office, 508 Metropolitan Building, St. Louis, Mo.

1898.—LANGFITT, WILLIAM STERLING, M.D., F.A.C.S. Surgeon in chief to St. John's Hospital. Office, 8047 Jenkins Building, Pittsburgh, Pa.

1914.—LEIGHTON, JR., ADAM P., L.M. (Dublin), M.D. Assistant in Gynecology, Bowdoin Medical School; Superintendent and Owner, Dr. Leighton's Maternity Hospital, Portland; Gynecologist to Edward Mason Dispensary, Portland; Member, State Board of Registration of Medicine. Residence and Office, 192 State Street, Portland, Me.

1915.—LITZENBERG, JENNINGS, A.B., M.D., F.A.C.S. Professor of Gynecology and Obstetrics, University of Minnesota. Residence, 3137 Park Avenue; Office, Donaldson Building, Minneapolis, Minn.

1890.—LONGYEAR, HOWARD WILLIAMS, M.D., F.A.C.S. Professor of Gynecology and Abdominal Surgery in the Detroit Post-Gradu-

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ate Medical School; Clinical Professor of Gynecology in the Detroit College of Medicine; Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; President of the Detroit Surgical Society; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892; Chairman Section of Obstetrics and Gynecology and Abdominal Surgery of the American Medical Association 1917. *Vice-president*, 1893; *President*, 1905; *Executive Council*, 1906–1908. Residence, 1699 Jefferson Avenue; Office, 32 Adams Avenue W., Detroit, Mich.

1911.—LOTHROP, EARL P., A.B., M.D., F.A.C.S. Gynecologist to the Buffalo Woman's Hospital; Consulting Surgeon to Columbus Hospital, Buffalo; Surgeon to the J. N. Adam Memorial Hospital for Tuberculosis, Perrysburg, N. Y. 153 Delaware Avenue, Buffalo, N. Y.

1910.—LOTT, HENRY STOKES, M.D. 123 Cherry Street, Winston, N. C.

1913.—LYNCH, JEROME MORLEY, M.D., F.A.C.S. Professor Rectal and Intestinal Diseases, New York Polyclinic; Consulting Surgeon Nassau Hospital, Mineola, L. I.; Attending Surgeon St. Mary's Hospital, Hoboken, N. J.; Member New York State and County Societies, American Medical Association, American Proctologic Society, North Western Medical and Surgical Society; Surgeon Medical Reserve, U. S. N. Residence and Office, 57 East Fifty-second St., New York City.

1910.—MCCLELLAN, BENJAMIN BUSH, A.B., A.M., M.D., F.A.C.S. Member American Medical Association; ex-President Ohio State Medical Society; Surgeon to McClellan Hospital. Residence, 636 South Detroit Street; Office, 7 East Second Street, Xenia, Ohio.

Founder.—MCMURTRY, LEWIS SAMUEL, A.M., M.D., LL.D., F.A.C.S. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association; President American Medical Association, 1905. *Executive*

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Council, 1891–1892, 1895–1905; *President*, 1893. Suite 542, The Atherton, Louisville, Ky.

1910.—McPherson, Ross, A.B., M.D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence, 26 Gramercy Park, East; Office, 20 West Fiftieth Street, New York, N. Y.

Founder.—Manton, Walter Porter, M.D., F.A.C.S. Head of Department and Professor of Obstetrics and Clinical Gynecology, Detroit College of Medicine and Surgery; Gynecologist to Harper Hospital and the Pontiac and Traverse City State Hospitals; Consulting Gynecologist to St. Joseph's Retreat; Formerly President of the Medical Board and Visiting Obstetrician Woman's Hospital and Infants' Home; President Detroit Academy of Medicine, 1892–1894; President Detroit Gynecological Society, 1890; President Wayne County Medical Society, 1908–1909; Chairman, Section on Obstetrics and Diseases of Women, 1909; Fellow of the Royal Medical Society, the American Gynecological Society, the American College of Surgeons; the Zoological Society of London, etc. *Vice-president*, 1894. 32 Adams Avenue, W., Detroit, Mich.

1911.—Marvel, Emery, M.D., F.A.C.S. Chief Surgeon and Gynecologist, Private Hospital Association, Atlantic City; Consulting Surgeon and Gynecologist, Jewish Seashore Home, Atlantic City, 1801 Pacific Avenue, Atlantic City, N. J.

1914.—Meeker, Harold Denman, A.B., M.D. Adjunct Professor of Surgery, Polyclinic Medical School and Hospital, New York; Visiting Surgeon to New York Red Cross Hospital; Assistant Surgeon, U.S.N., M.R.C. Residence and Office, 220 West 79th Street, New York, N. Y.

Founder.—Miller, Aaron Benjamin, M.D., F.A.C.S. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital; Consulting Gynecologist to Hospital for Women and Children; Gynecologist to Dispensary. *Vice-president*, 1899, 1904; *President*, 1910; *Executive Council*, 1911. 326 Montgomery Street, Syracuse, N. Y.

1905.—Miller, John D., M.D., F.A.C.S. Assistant to the Chair of Clinical Gynecology in the Medical College of Ohio, University

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of Cincinnati; Gynecologist to the Good Samaritan Hospital. N. E. Corner Clifton Avenue and W. McMillan Street, Cincinnati, Ohio.

1911.—MOOTS, CHARLES W., B.S., M.D., F.A.C.S. Gynecologist to Flower Hospital; President of Academy of Medicine of Toledo and Lucas County, 1912. Residence, River Road, R.F.D. No. 4; Office, 347 The Nicholas, Toledo, Ohio.

1907.—MORIARTA, DOUGLAS C., M.D., F.A.C.S. Senior Surgeon to Saratoga Hospital; Surgeon in chief to Saint Christian Hospital for Children; Director of State Experimental Station at Saratoga. 511 Broadway, Saratoga Springs, N. Y.

1904.—MORRIS, LEWIS COLEMAN, M.D., F.A.C.S. Professor of Gynecology and Abdominal Surgery in the Birmingham Medical College; Secretary, Medical Association State of Alabama, 1904; Member of Jefferson County Board of Health. *Vice-president*, 1911. 1203 Empire Building, Birmingham, Ala.

1890.—MORRIS, ROBERT TUTTLE, A.M., M.D., F.A.C.S. Professor of Surgery in the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1892; *Executive Council*, 1906, 1908–1911; *President*, 1907. 616 Madison Avenue, New York, N. Y.

1896.—NOBLE, GEORGE HENRY, M.D. F.A.C.S. Gynecologist to the Grady Hospital; Secretary to the Section on Obstetrics and Gynecology of American Medical Association, 1897; Member of the Southern Surgical and Gynecological Association. 186 South Pryor Street, Atlanta, Ga.

1903.—NOBLE, THOMAS BENJAMIN, M.D. Professor of Abdominal Surgery in the Central College of Physicians and Surgeons; Consultant in the Diseases of Women at the City Hospital, City Dispensary, and Protestant Deaconess's Hospital, Indianapolis. 720 Newton Claypool Building, Indianapolis, Ind.

1907.—OLMSTED, INGERSOLL, M.D., F.A.C.S. Surgeon to the City and St. Joseph's Hospitals, Hamilton, Ont. 215 South James St., Hamilton, Ontario, Canada.

1899.—PANTZER, HUGO OTTO, A.M., M.D., F.A.C.S., Past Professor, Surgical Pathology and Clinical Gynecology, in the Central College of Physicians and Surgeons; Past Professor Clinical Gyne-

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cology, Indiana Medical College, Medical Department of Purdue University; Late Professor of Clinical Gynecology in the Indiana Medical college, Medical Department of Indiana University; Gynecologist to Methodist Hospital; Past President of Indianapolis Medical Society; Member of Indiana State Association and American Medical Association. *President* 1915. 601 Hume-Mansur Bldg., Indiapolis, Ind.

1916.—PECK, GEORGE AUGUSTUS, M.D., Attending Surgeon, New Rochelle Hospital, New Rochelle, N. Y.; Consulting Surgeon, Westchester County Hospital, New York. Residence and Office 189 Centre Ave., New Rochelle, N. Y.

1916.—PERCY, JAMES FULTON, M.A., M.D., F.A.C.S. Residence 593 East Losey St., Office, 147 South Cherry St., Galesburg, Ill.

1899.—PFAFF, ORANGE G., M.D. Adjunct Professor of Obstetrics and Diseases of Women in the Medical College of Indiana; Gynecologist to the City, Deaconess's, and St. Vincent's Hospitals. 1337 North Pennsylvania Street, Indianapolis, Ind.

1898.—PORTER, MILES F., M.D., F.A.C.S. Surgeon to Hope Hospital; Professor of Surgery in the Indiana University School of Medicine; ex-President Indiana State Medical Society. *Vice-president*, 1902; *President*, 1912–1913. 2326 Fairfield Ave. Fort Wayne, Ind.

1914.—POTTER, IRVING WHITE, M.D. Attending Obstetrician, St. Mary's Maternity Hospital, Assistant Obstetrician, Buffalo General Hospital; Attending Obstetrician, German Deaconess Hospital. Residence and Office, 420 Franklin St., Buffalo, N. Y.

1903.—POUCHER, JOHN WILSON, M.D., F.A.C.S. Consulting Surgeon to Vassar Brothers Hospital, Poughkeepsie. 339 Mill Street, Poughkeepsie, N. Y.

1904.—REDER, FRANCIS, M.D., F.A.C.S. Surgeon to Missouri Baptist Sanitarium; Surgeon to St. John's Hospital; Visiting Surgeon to St. Louis City Hospital, and allied Institutions. Residence, 6346 Berlin Avenue; Office, 518–519 Delmar Building, St. Louis, Mo.

Founder.—REED, CHARLES ALFRED LEE, A.M., M.D., F.A.C.S. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical

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College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Association; Fellow of the British Gynecological Society; President of the American Medical Association, 1901. *Executive Council*, 1890–1897; *President*, 1898. Rooms 60 and 62, The Groton, N. E. corner Seventh and Race Streets, Cincinnati, Ohio.

1913.—RONGY, ABRAHAM JACOB, M.D., F.A.C.S. Attending Gynecologist, Lebanon Hospital; Attending Surgeon, Jewish Maternity Hospital; Consulting Gynecologist, Rockaway Beach Hospital. Residence and Office, 62 West 89th Street, New York City.

1909.—ROSENTHAL, MAURICE I., M.D., F.A.C.S. Surgeon to Saint Joseph's Hospital. 336 W. Berry Street, Fort Wayne, Ind.

1902.—RUNYAN, JOSEPH PHINEAS, M.D. Division Surgeon to the Choctaw, Oklahoma and Gulf Railroad; Secretary of the Arkansas State Medical Association, President, 1904. State Bank Bldg., Little Rock, Ark.

1906.—RUTH, CHARLES EDWARD, M.D., F.A.C.S. MAJOR, M.O.R.C., U.S. Army; Professor of Surgery and Clinical Surgery in the Keokuk Medical College (College of Physicians and Surgeons); Surgeon Iowa M. E. Hospital; Surgeon to Wabash Railway; Chief of Surgical Base Hospital, Camp Dodge, Ia. Surgeon to the Chicago and Rock Island Pacific Railway. Equitable Bldg., Des Moines, Iowa.

1903.—SADLIER, JAMES EDGAR, M.D., F.A.C.S. Consulting Surgeon to Highland Hospital, Poughkeepsie. *Vice-president*, 1909. 295 Mill Street, Poughkeepsie, N. Y.

1909.—SANES, K. ISADORE, M.D., F.A.C.S. Gynecologist to the West Penn Hospital; Consulting Gynecologist to the Montefiore Hospital, Pittsburgh. Residence, 234 McKee Place; Office, Jenkins Building, Pittsburgh, Pa.

1910.—SCHILDECKER, CHARLES BUSHFIELD, M.D. Assistant Gynecologist to Western Pennsylvania Hospital; Coroner's Physician of Allegheny County. Residence, 414 Rebecca Street; Office, 1105 Park Building, Pittsburgh, Pa.

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1904.—SCHWARZ, HENRY, M.D., F.A.C.S. Professor of Obstetrics, Medical Department of Washington University. *Vice-president*, 1911. 440 North Newstead Avenue, St. Louis, Mo.

1901.—SCOTT, N. STONE, A.M., M.D., F.A.C.S. Formerly Dean and Professor of Surgery, College of Physicians and Surgeons, Cleveland; Consulting Surgeon to City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out-patient Department of Cleveland General Hospital. Residence, 531 Prospect Avenue; Office, 603–605 Citizens' Building, Cleveland, Ohio.

1895.—SELLMAN, WILLIAM ALFRED BELT, M.D. Gynecologist to The Biedler and Sellman Sanitarium; Member of the Medical and Chirurgical Faculty of Maryland; also of the Baltimore City Medical Society; also of the American Medical Association; the Gynecological and Obstetrical Association of Baltimore; Physician to The Margaret J. Bennett Home for Young Ladies. *Vice-president*, 1908; *Executive Council*, 1909–1910. 5 East Biddle Street, Baltimore, Maryland.

1899.—SIMPSON, FRANK FARROW, A.B., M.D., F.A.C.S. Gynecologist to the Allegheny General Hospital; Consulting Gynecologist to the Columbia Hospital. *Vice-president*, 1906. Jenkins Building, Pittsburgh, Pa.

1912.—SKEEL, ARTHUR JULIUS, M.D., F.A.C.S. Assistant Professor of Obstetrics, Western Reserve University; Obstetrician to St. Luke's Hospital; Consulting Obstetrician to the Florence Crittenden Home; Consulting Obstetrician to the Woman's Hospital. Residence and Office, 1834 East 65th Street, Cleveland, Ohio.

1901.—SKEEL, ROLAND EDWARD, M.D., F.A.C.S. Associate Clinical Professor of Gynecology in Western Reserve University; Gynecologist to St. Luke's, City, and Lutheran Hospitals; Consulting Surgeon to the Lakewood Hospital. 314 Osborn Building, Cleveland, Ohio.

1910.—SMEAD, LEWIS FREDERIC, A.B., M.D., F.A.C.S. Surgeon to St. Vincent's Hospital, Toledo. Residence, 2921 Parkwood Avenue; Office, 242 Michigan Street, Toledo, Ohio.

1891.—SMITH, CHARLES NORTH, M.D., F.A.C.S. Surgical Chief of Flower Hospital; Gynecologist to St. Vincent's Hospital; *Vice-president*, 1910. 234 Michigan Street, Toledo, Ohio.

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1904.—SMITH, WILLIAM S., M.D. Professor of Gynecology in the Maryland Medical College; Gynecologist to Franklin Square Hospital. 528 Hanover Street, Baltimore, Md.

1902.—STARK, SIGMAR, M.D., F.A.C.S. Professor of Obstetrics and Clinical Gynecology in the Cincinnati College of Medicine and Surgery; Gynecologist to the Jewish Hospital. 1108 East McMillan Street, Cincinnati, Ohio.

1908.—STEWART, DOUGLAS HUNT, M.D., F.A.C.S. Surgeon O. P. D. Knickerbocker Hospital. Residence, 128 West 6th Street, New York, N. Y.

1911.—STILLWAGEN, CHARLES A., M.D., F.A.C.S. Office, Highland Bldg., Residence, 5343 Pennsylvania Avenue, Pittsburgh, Pa.

1914.—STRASSER, AUGUST ADRIAN, M.D., F.A.C.S. Surgeon, Stumpf Memorial Hospital, Kearny, N. J.; Assistant Surgeon of the Woman's Hospital, St. Michaels Hospital, Newark, N. J.; Adjunct Surgeon, St. James Hospital, Newark, N. J. Residence and Office, 115 Beech St., Arlington, N. J.

1899.—SWOPE, LORENZO W., M.D., F.A.C.S. Surgeon to the Consolidated Traction Company; Chief Surgeon to Wabash Railroad, Pittsburgh Division; Surgeon to Western Pennsylvania Hospital; Surgeon to Passavant Hospital; Member of the Allegheny County Medical Society; Member of the American Medical Association. Residence, 4629 Bayard Street; Office, 1105 Park Building, Pittsburgh, Pa.

1901.—TATE, MAGNUS ALFRED, M.D., F.A.C.S. Professor of Obstetrics Miami Medical College; President Cincinnati Academy of Medicine, 1905; Obstetrician to the Cincinnati General Hospital and to the Good Samaritan Hospital. 19 West Seventh Street, Cincinnati, Ohio.

1908.—TORRANCE, GASTON, M.D. Surgeon to St. Vincent's and the Hillman Hospitals in Birmingham. Residence, 2705 Caldwell Avenue; Office, 325 Woodward Building, Birmingham, Ala.

1917.—TOVEY, DAVID WILLIAM, M.D. Adjunct Professor of Gynecology, N. Y. Polyclinic Medical School; Gynecologist N. Y. Polyclinic Hospital; Gynecologist Harlem Dispensary. Residence and Office, 240 Riverside Drive, New York, N. Y.

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Founder.—VANDER VEER, ALBERT, A.M., M.D., PH.D., LL.D., F.A.C.S. Five years Professor of Anatomy, Thirty-eight years Professor of Surgery, Albany Medical College; Surgeon-in-Chief, Albany Hospital; Consulting Surgeon, South End Dispensary; Consulting Surgeon, Benedictine Hospital, Kingston, N. Y.; Consulting Surgeon, Champlain Valley Hospital, Plattsburgh, N. Y.; Consulting Surgeon, Crippled and Ruptured Children, West Haverstraw, N. Y.; Fellow of the American Surgical Association (President, 1906); Fellow of the British Gynecological Society; Member of the American Medical Association (First Vice-president and President, 1915); Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Boston Gynecological Society; Vice-Chancellor of the Board of Regents of the University of the State of New York. *Executive Council*, 1889–1891, 1895–1905; *President*, 1892. 28 Eagle Street, Albany, N. Y.

1913.—VANDER VEER, EDGAR ALBERT, PH.D., M.D., F.A.C.S. Attending Surgeon Albany Hospital; Consulting Surgeon, Champlain Valley Hospital, Plattsburgh, N. Y. Residence, 150 State St.; Office, 28 Eagle St., Albany N. Y.

1912.—VAN SWERINGEN, BUDD, M.D. Gynecologist to the Lutheran Hospital, Surgeon to Pennsylvania Railroad; Formerly Professor of Medicine, Ft. Wayne College of Medicine. 208 Washington Boulevard, Fort Wayne, Indiana.

1909.—WADE, HENRY ALBERT, M.D., F.A.C.S. Visiting Surgeon to Bethany Deaconess's Hospital; Attending Gynecologist to Williamsburg Hospital, Brooklyn. 495 Greene Avenue, Brooklyn, N. Y.

1909.—WALDO, RALPH, M.D., F.A.C.S. Gynecologist to Lebanon Hospital; Associate Surgeon to the Woman's Hospital of the State of New York; Consulting Obstetrician, Jewish Maternity Nyack Hospital and Rockaway Beach Hospital. 54 W. 71st Street, New York, N. Y.

1891.—WALKER, EDWIN, M.D., Ph.D., F.A.C.S. Surgeon to the Walker Hospital; Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association; First Vice-president American Medical Association, 1907. *Vice-president*, 1901. 712 South Fourth Street, Evansville, Ind.

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1907.—WEISS, EDWARD ALOYSIUS, M.D., F.A.C.S. Gynecologist to Mercy Hospital; Gynecologist to Presbyterian Hospital; Obstetrician to Rosalia Maternity Hospital; Assistant Professor of Gynecology at University of Pittsburgh, Medical Department. 714 Jenkins Building, Pittsburgh, Pa.

1914.—WELTON, THURSTON SCOTT, M.D. Associate Visiting Gynecologist, Williamsburgh Hospital, Brooklyn; Residence and Office, 842 Union Street, Brooklyn, N. Y.

Founder.—WERDER, XAVIER OSWALD, M.D., F.A.C.S. Professor of Gynecology at the University of Pittsburgh, Medical Department; Gynecologist to Mercy Hospital. *Treasurer*, 1888–1911. *President*, 1911. 714 Jenkins Building, Pittsburgh, Pa.

1904.—WEST, JAMES NEPHEW, M.D., F.A.C.S. Professor of Diseases of Women and Secretary of the Faculty at the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1906. 71 West Forty-ninth Street, New York.

1896.—WESTMORELAND, WILLIS FOREMAN, M.D., F.A.C.S. Professor of Surgery at the Atlanta Medical College. Suite 241, Equitable Building, Atlanta, Ga.

1911.—WHITE, GEORGE R., B.S., M.D., F.A.C.S. Surgeon Park View Sanitarium. 2 Liberty E., Savannah, Ga.

1916.—WING, LUCIUS ARTHUR, B.Sc., M.D., Attending Surgeon, Lying-In Hospital, City of New York; Assisting Surgeon, St. Mary's Free Hospital for Children; Instructor in Clinical Surgery, Cornell University Medical College. Office and Residence 116 East Sixty-third St., New York, N. Y.

1909.—YATES, H. WELLINGTON, M.D., F.A.C.S. Gynecologist to St. Mary's Hospital; Gynecologist to Providence Hospital; Assistant Professor of Gynecology, Detroit College of Medicine and Surgery; Member of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association; Member of the Staff of St. Luke's Hospital; Member of the Wayne County and Michigan State Medical Society; President Detroit Medical Club; Medical Director of the Peninsular Life Insurance Co. Residence, 1360 Fort Street, West; Office, 607 Gas Office Building, Detroit, Mich.

1907.—ZIEGLER, CHARLES EDWARD, A.M., M.D., F.A.C.S. Professor of Obstetrics in the University of Pittsburgh; Medical Director of the Elizabeth Steele Magee Hospital for Women; Medical

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Director of the Pittsburgh Maternity Dispensary; Consulting Obstetrician to the Columbia Hospital and Consulting Obstetrician and Gynecologist to the Dixmont Hospital for the Insane. Forbes and Halket Streets, Pittsburgh, Pa.

1900.—ZINKE, ERNST GUSTAV, M.D., F.A.C.S., Professor of Obstetrics and Clinical Midwifery in the Ohio-Miami Medical College, University of Cincinnati, 1896–1916. Emeritus Professor of Obstetrics, 1916. Consulting Obstetrician to Cincinnati General Hospital. Honorary Chief of Staff, and Obstetrician and Gynecologist to the German Hospital; President of the Cincinnati Obstetric Society, 1887; President Academy of Medicine of Cincinnati, 1894; Member and Chairman of Section on Obstetrics, Gynecology and Abdominal Surgery, American Medical Association, 1914; Honorary Member Jackson County Medical Society, Kansas City, Mo.; Honorary Member, Cincinnati Obstetric Society. *President*, 1908. Executive Council 1909–1911. Secretary. 4 West Seventh St., Cincinnati, Ohio.

Total, one hundred and thirty Ordinary Fellows.

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ORDINARY FELLOWS, DECEASED.

1890.—ASDALE, WILLIAM JAMES, M.D., Beaver Falls, Pa., 1912.

Founder.—BAKER, WASHINGTON HOPKINS, M.D., Philadelphia, Pa., 1904.

1889.—BURNS, BERNARD, M.D., Allegheny, Pa., 1892.

1890.—COLES, WALTER, M.D., St. Louis, Mo., 1892.

1889.—DAVIS, WILLIAM ELIAS B., M.D., Birmingham, Ala., 1903.

1892.—DORSETT, WALTER BLACKBURN, M.D., F.A.C.S., St. Louis, Mo., 1915.

1892.—DUFF, JOHN MILTON, A.M., M.D., Ph.D., Pittsburg, Pa., 1904.

1898.—DUNN, JAMES C., M.D., Pittsburg, Pa., 1907.

1892.—DUNNING, LEHMAN HERBERT, M.D., Indianapolis, Ind., 1906.

1895.—FERGUSON, ALEXANDER HUGH, M.D., Chicago, Ill., 1911.

1890.—FREDERICK, CARLTON CASSIUS, B.S., M.D., Buffalo, N.Y., 1911.

1913.—FREELAND, JAMES ROY, M.D., F.A.C.S., Pittsburg, Pa. 1917.

1891.—GIBBONS, HENRY, JR., A.M., M.D., San Francisco, Cal., 1912.

1904.—GOODFELLOW, GEORGE E., M.D., Los Angeles, Cal., 1910.

1913.—GRAY, FRANK D., M.E.D., M.D. F.A.C.S., Jersey City, N.J., 1916.

1892.—HAGGARD, WILLIAM DAVID, JR., M.D., Nashville, Tenn., 1901.

Founder.—HILL, HAMPTON EUGENE, M.D., Saco, Me., 1894.

1912.—HOTALING, ALBERT STEUBEN, M.D., Syracuse, N. Y., 1913.

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1898.—HYDE, JOEL W., M.D., Brooklyn, N. Y., 1907.

1897.—INGRAHAM, HENRY DOWNER, M.D., Buffalo, N. Y., 1904.

Founder.—JARVIS, GEORGE CYPRIAN, M.D., Hartford, Conn., 1900.

1892.—JELKS, JAMES THOMAS, M.D., Hot Springs, Ark., 1902.

1910.—JENKS, NATHAN, B.S., M.D., F.A.C.S., Detroit, 1916.

1900.—LINVILLE, MONTGOMERY, A.B., M.D., New Castle, Pa., 1910.

Founder.—LOTHROP, THOMAS, M.D., Buffalo, N. Y., 1902.

1891.—MCCANN, JAMES, M.D., Pittsburgh, Pa., 1893.

1898.—MCCANN, THOMAS, M.D., Pittsburgh, Pa., 1903.

1896.—MOONEY, FLETCHER D., M.D., St. Louis, Mo., 1897.

1894.—MURPHY, JOHN BENJAMIN, A.M., M.D., F.A.C.S., Chicago, Ill., 1916.

Founder.—POTTER, WILLIAM WARREN, M.D., Buffalo, N. Y., 1911.

Founder.—PRICE, JOSEPH, M.D., Philadelphia, Pa., 1911.

1896.—RHETT, ROBERT BARNWELL, JR., M.D., Charleston, S. C., 1901.

1889.—ROHE, GEORGE HENRY, M.D., Baltimore, Md., 1899.

1892.—ROSENWASSER, MARCUS, M.D., Cleveland, O., 1910.

1890.—ROSS, JAMES FREDERICK WM., M.D., C.M., L.R.C.P., Toronto, Ontario, Canada, 1911.

1889.—SEYMOUR, WILLIAM WOTKYNS, A.B., M.D., Troy, N. Y., 1904.

1902.—SIMONS, MANNING, M.D., Charleston, S. C., 1911.

1913.—SMITH, LEWIS W., A.B., M.D., Pittsburgh, Pa., 1917.

Founder.—TOWNSEND, FRANKLIN, A.M., M.D., Albany, N. Y., 1895.

1907.—VANCE, AP MORGAN, M.D., F.A.C.S., Louisville, Ky., 1915.

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ORDINARY FELLOWS.

Classified.

ALABAMA.

Davis, John D. S.,	2031 Avenue G.,	Birmingham.
Morris, Lewis Coleman,	1203 Empire Bldg.,	Birmingham.
Torrance, Gaston,	325 Woodward Bldg.,	Birmingham.

ARKANSAS.

Runyan, Joseph Phineas,	State Bank Bldg.,	Little Rock.

CALIFORNIA.

Buteau, Samuel H.,	1155 Broadway,	Oakland.
Hadden, David,	Oakland Bank of Savings Bldg.,	Oakland.

CANADA.

Howitt, Henry,	221 Woolwich Street,	Guelph, Ontario.
Olmsted, Ingersoll,	215 South James St.,	Hamilton, Ontario.

GEORGIA.

Noble, George Henry,	186 South Pryor Street,	Atlanta.
Westmoreland, W. F.,	241 Equitable Bldg.,	Atlanta.
White, George R.,	2 Liberty E.,	Savannah.

ILLINOIS.

Bacon, Joseph Barnes,		Macomb.
Barrett, Channing,	561 Stratford Place,	Chicago.
Goldspohn, Albert,	34 Washington St.,	Chicago.
Percy, James F.,	147 S. Cherry St.,	Galesburg.

INDIANA.

Walker, Edwin,	712 South Fourth St.,	Evansville.
Porter, Miles F.,	207 West Wayne St.,	Fort Wayne.
Rosenthal, M. I.,	336 West Berry St.,	Fort Wayne.
Van Sweringen, Budd,	208 Washington Blvd.,	Fort Wayne.
Clark, Edmund D.,	712 Hume Mansur Bldg.,	Indianapolis.
Eastman, Thomas B.,	309 Pennway Bldg.,	Indianapolis.
Noble, Thomas B.,	720 Newton Claypool Bldg.,	Indianapolis.
Pantzer, Hugo O.,	224 North Meridian St.,	Indianapolis.
Pfaff, O. G.,	1337 North Pennsylvania St.,	Indianapolis.

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IOWA.

Ruth, Charles E.,	407 Equitable Bldg.,	Des Moines.

KENTUCKY.

Frank, Louis,	The Atherton,	Louisville.
McMurtry, Lewis S.,	The Atherton,	Louisville.

MAINE.

Leighton, Adam P.,	192 State St.,	Portland.

MARYLAND.

Branham, Joseph H.,	2200 Eutaw Place,	Baltimore.
Sellman, William A. B.,	5 East Biddle St.,	Baltimore.
Smith, William S.,	528 Hanover St.,	Baltimore.

MICHIGAN.

Abrams, Edward Thomas,		Dollar Bay.
Bell, John Norval,	506 Washington Arcade,	Detroit.
Brown, Geo. Van Amber,	32 Adams Ave., West,	Detroit.
Carstens, J. Henry,	620 Woodward Ave.,	Detroit.
Davis, James E.,	821 West Fort St.,	Detroit.
Longyear, H. W.,	32 Adams Ave., W.	Detroit.
Manton, Walter P.,	32 Adams Ave., West,	Detroit.
Yates, H. Wellington,	1360 Fort Street,	Detroit.

MINNESOTA.

Litzenberg, Jennings C.,	Donaldson Bldg.,	Minneapolis.

MISSOURI.

Brown, John Young,	612 Metropolitan Bldg.,	Saint Louis.
Crossen, H. S.,	Metropolitan Bldg.,	Saint Louis.
Elbrecht, Oscar H.,	Metropolitan Bldg.,	Saint Louis.
Jonas, Ernst,	465 North Taylor Ave.,	Saint Louis.
Kirchner, Walter C. G.,	508 Metropolitan Bldg.,	Saint Louis.
Reder, Francis,	6346 Berlin Ave.,	Saint Louis.
Schwarz, Henry,	440 North Newstead Ave.,	Saint Louis.

NEBRASKA.

Findley, Palmer,	418 Brandeis Theater Bldg.,	Omaha.

NEW JERSEY.

Strasser, August A.,	115 Beech St.,	Arlington.
Darnall, Wm. Edgar,	1704 Pacific Ave.,	Atlantic City.
Marvel, Emery,	1801 Pacific Ave.,	Atlantic City.
Dickinson, Gordon K.,	280 Montgomery St.,	Jersey City.
Ill, Charles L.,	188 Clinton Ave.,	Newark.
Ill, Edward J.,	1002 Broad St.,	Newark.
Hedges, Ellis W.,	703 Watchung Ave.,	Plainfield.

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NEW YORK.

Boyd, James P.,	152 Washington Ave.,	Albany.
Vander Veer, Albert,	28 Eagle Street,	Albany.
Vander Veer, Edgar A.,	150 State St.,	Albany.
Wade, Henry A.,	495 Greene Ave.,	Brooklyn.
Welton, T. Scott,	842 Union St.,	Brooklyn.
Congdon, Chas. E.,	859 Humboldt Parkway,	Buffalo.
Hayd, H. E.,	493 Delaware Ave.,	Buffalo.
King, James E.,	1248 Main St.,	Buffalo.
Lothrop, Earl P.,	153 Delaware Ave.,	Buffalo.
Potter, Irving W.,	420 Franklin St.,	Buffalo.
Chandler, George,	11 East Chestnut St.,	Kingston.
Peck, George A.,	189 Centre Ave.,	New Rochelle.
Bainbridge, W. S.,	34 Gramercy Place,	New York.
Bandler, S. W.,	134 West Eighty-seventh St.,	New York.
Davis, Asa B.,	42 East 35th St.,	New York.
Erdmann, John F.,	60 West Fifty-Second St.,	New York.
Furniss, Harry Dawson,	45 East 62d Street,	New York.
Harrar, James A.,	29 East Seventy-seventh St.,	New York.
Hill, I. L.,	616 Madison Ave.,	New York.
Lynch, Jerome Morley,	57 East 52nd St.,	New York.
Lobenstine, R. W.,	155 East Seventieth St.,	New York.
McPherson, Ross A.,	20 West Fiftieth St.,	New York.
Meeker, Harold D.,	220 West 79th St.,	New York.
Morris, R. T.,	616 Madison Ave.,	New York.
Rongy, Abraham J.,	62 West 89th Street,	New York.
Stewart, Douglas H.,	128 West 86th St.,	New York.
Tovey, David W.,	240 Riverside Drive,	New York.
Waldo, Ralph,	54 West 71st St.,	New York.
West, James N.,	71 West Forty-ninth St.,	New York.
Wing, Lucius A.,	116 East Sixty-third St.,	New York.
Brown, Wm. M.	1776 East Ave.,	Rochester.
Moriarta, Douglas C.,	511 Broadway,	Saratoga Springs.
Sadlier, James E.,	295 Mill St.,	Poughkeepsie.
Poucher, John W.,	339 Mill St.,	Poughkeepsie.
Miller, A. B.,	326 Montgomery St.,	Syracuse.

NORTH CAROLINA.

Lott, Henry Stokes,	123 Cherry St.,	Winston.

OHIO.

Bonifield, Chas. L.,	409 Broadway,	Cincinnati.
Hall, Joseph A.,	628 Elm St.,	Cincinnati.
Hall, Rufus B.,	628 Elm St.,	Cincinnati.
Miller, John D.,	N. E. Cor. Clifton & McMillan,	Cincinnati.
Reed, C. A. L.,	The Groton,	Cincinnati.
Stark, Sigmar,	1108 East McMillan St.,	Cincinnati.
Tate, Magnus A.,	19 West Seventh St.,	Cincinnati.
Zinke, E. Gustav,	4 West Seventh St.,	Cincinnati.

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Crile, George W.,	Osborn Bldg.,	Cleveland.
Humiston, William H.,	536 Rose Bldg.,	Cleveland.
Lincoln, Walter R.,	Lennox Bldg.,	Cleveland.
Scott, N. Stone,	603 Citizens Bldg.,	Cleveland.
Skeel, Arthur,	1834 East 65th St.,	Cleveland.
Skeel, Roland Edward,	314 Osborn Bldg.,	Cleveland.
Baldwin, James F.,	405 East Town St.,	Columbus.
Crotti, André,	1728 East Broad St.,	Columbus.
Goodman, Sylvester J.,	238 State St.,	Columbus.
Hamilton, Chas. S.,	142 South Garfield St.,	Columbus.
Stamm, Martin,	316 Napoleon St.,	Fremont.
Dice, Wm. Gordon,	240 Michigan St.,	Toledo.
Gillette, Wm. J.,	1613 Jefferson St.,	Toledo.
Jacobson, Julius H.,	2050 Franklin St.,	Toledo.
Moots, Chas. W.,	The Nicholas,	Toledo.
Smead, Lewis F.,	242 Michigan St.,	Toledo.
Smith, Chas. N.,	234 Michigan St.,	Toledo.
McClellan, Benjamin B.,	7 East Second St.,	Xenia.

PENNSYLVANIA.

Kennedy, James W.,	1409 Spruce St.,	Philadelphia.
Blume, Frederick,	Jenkins Bldg.,	Pittsburg.
Foster, Curtis S.,	308 Diamond Bank Bldg.	Pittsburg.
Huggins, R. R.,	1018 Westinghouse Bldg.,	Pittsburg.
Langfitt, William S.,	Jenkins Bldg.,	Pittsburg.
Sanes, K. I.,	Jenkins Bldg.,	Pittsburg.
Schildecker, Charles B.,	1105 Park Bldg.,	Pittsburg.
Simpson, Frank F.,	Jenkins Bldg.,	Pittsburg.
Stillwagen, Charles A.,	524 Pennsylvania Ave.,	Pittsburg.
Swope, Lorenzo W.,	1105 Park Bldg.,	Pittsburg.
Weiss, Edward A.,	714 Jenkins Bldg.,	Pittsburg.
Werder, Xavier O.,	Jenkins Bldg.,	Pittsburg.
Ziegler, Chas. E.,	354 South Highland Ave.,	Pittsburg.

RHODE ISLAND.

Jones, Arthur T.,	81 Elm Grove Ave.,	Providence.
Keefe, John W.,	259 Benefit St.,	Providence.

TENNESSEE.

Haggard, William D.,	148 Eighth Ave., North,	Nashville.

VIRGINIA.

Baughman, Greer,	26 North Laurel St.,	Richmond.
Bosher, Lewis C.,	422 East Franklin St.,	Richmond

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MINUTES OF THE PROCEEDINGS

OF THE]

THIRTIETH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT

ROBERT TREAT HOTEL

NEWARK, N. J.

SEPTEMBER 17, 18, AND 19, 1917

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THIRTIETH ANNUAL MEETING.

SEPTEMBER 17, 18 AND 19, 1917.

The Fellows whose names appear below were present:

BAINBRIDGE, WM. SEAMAN, . . . NEW YORK, N.Y.
BANDLER, SAMUEL W., ... NEW YORK, N.Y.
BELL, JOHN N., ... DETROIT, MICH.
BONIFIELD, CHARLES L., ... CINCINNATI, OHIO.
BRANHAM, JOSEPH H., ... BALTIMORE, MD.
BROWN, G. VAN AMBER, ... DETROIT, MICH.
CARSTENS, J. HENRY, ... DETROIT, MICH.
DARNALL, WM. EDGAR, ... ATLANTIC CITY, N.J.
DAVIS, ASA B., ... NEW YORK, N.Y.
DAVIS, JAMES E., ... DETROIT, MICH.
DICE, WILLIAM G., ... TOLEDO, OHIO.
DICKINSON, GORDON K., ... JERSEY CITY, N.J.
FURNISS, H. DAWSON, ... NEW YORK, N.Y.
GOLDSPOHN, ALBERT, ... CHICAGO, ILL.
HARRAR, JAMES, A., ... NEW YORK, N.Y.
HAYD, HERMAN E., ... BUFFALO, N.Y.
HEDGES, ELLIS W., ... PLAINFIELD, N.J.
HILL, ISADORE L., ... NEW YORK, N.Y.
HUMISTON, WILLIAM H., ... CLEVELAND, OHIO.
ILL, CHARLES L., ... NEWARK, N.J.
ILL, EDWARD J., ... NEWARK, N.J.
JACOBSON, JULIUS H., ... TOLEDO, OHIO.
JONES, ARTHUR T., ... PROVIDENCE, R.I.
KEEFE, JOHN W., ... PROVIDENCE, R.I.
KING, JAMES E., ... BUFFALO, N.Y.
McPHERSON, ROSS, ... NEW YORK, N.Y.
MARVEL, EMERY, ... ATLANTIC CITY, N.J.
MEEKER, HAROLD D., ... NEW YORK, N. Y
MILLER, AARON B., ... SYRACUSE, N.Y.
MORIARTA, DOUGLAS C., ... SARATOGA SPRINGS, N.Y.
MORRIS, ROBERT T., ... NEW YORK, N.Y.
NOBLE, THOMAS B., ... INDIANAPOLIS, IND.

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PANTZER, HUGO O., ... INDIANAPOLIS, IND.
PERCY, JAMES F., ... GALESBURG, ILL.
POTTER, IRVING W., ... BUFFALO, N.Y.
POUCHER, J. WILSON, ... POUGHKEEPSIE, N.Y.
REDER, FRANCIS, ... ST. LOUIS, MO.
RONGY, ABRAHAM J., ... NEW YORK, N.Y.
SADLIER, JAMES E., ... POUGHKEEPSIE, N.Y.
SELLMAN, W. A. B., ... BALTIMORE, MD.
SCOTT, N. STONE, ... CLEVELAND, OHIO.
STEWART, DOUGLAS H., ... NEW YORK, N.Y.
STRASSER, AUGUST A., ... ARLINGTON, N.J.
TORRANCE, GASTON, ... BIRMINGHAM, ALA.
VANDER VEER, EDGAR, ... ALBANY, N.Y.
VAN SWERINGEN, BUDD, ... FORT WAYNE, IND.
WADE, HENRY A., ... BROOKLYN, N.Y.
WEISS, EDWARD J., ... PITTSBURGH, PA.
WELTON, THURSTON S., ... BROOKLYN, N.Y.
WERDER, XAVIER O., ... PITTSBURGH, PA.
ZINKE, E. GUSTAV, ... CINCINNATI, OHIO.
Total, 51.

The following-named guests were extended the privileges of the floor and invited to participate in the discussions:

Allen, Emma L., ... Jersey City, N.J.
Aranow, Harry, ... New York, N.Y.
Banks, Winifred D., ... East Orange, N.J.
Beling, C. C., ... Newark, N.J.
Bingham, A. W., ... East Orange, N.J.
Bidwell, P. J., ... Toledo, Ohio.
Bleyle, Herman C., ... Newark, N.J.
Boldt, Hermann J., ... New York, N.Y.
Broadnax, Mary E., ... Newark, N.J.
Buermann, William, ... Newark, N.J.
Cameron, William H., ... Pittsburgh, Pa.
Chandler, Wm. J., ... South Orange, N.J.
Clark, J. Henry, ... Newark, N.J.
Conaway, Walter P., ... Atlantic City, N.J.
Condict, Alice B., ... Orange, N.J.
Danzis, Maximillian, ... Newark, N.J.
De Witt, William A., ... Bloomsburg, Pa.
English, David C., ... New Brunswick, N.J.
Ewing, Kathryn F., ... Newark, N.J.

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Fine, Moses J.,. . . . . Newark, N.J.
Fischer, Armin, ... Newark, N.J.
Gauch, William, ... Newark, N.J.
Gershenfeld, David B., ... Newark, N.J.
Griffiths, Chauncey B., ... Newark, N.J.
Guldner, R., ... New York, N.Y.
Hagerty, John F., ... Newark, N.J.
Hagney, F. W., ... Newark, N.J.
Harrison, J. B., ... Westfield, N.J.
Haussling, F. R., ... Newark, N.J.
Hawkes, E. M. Z., ... Newark, N.J.
Hosp, Paul H., ... Newark, N.J.
Houck, William J., ... Newark, N.J.
Hughes, Morgan D., ... Bloomfield, N.J.
Husserl, Siegfried, ... Newark, N.J.
Kent, George R., ... Newark, N.J.
Kessler, Henry B., ... Newark, N.J.
King, George W., ... Jersey City, N.J.
Kraker, David A., ... Newark, N.J.
Lane, A. W.,. . . . . East Orange, N.J.
Lane, Francis B., ... East Orange, N.J.
Levy, Julius,. . . . . Newark, N.J.
Mitchell, Augustus J., ... Newark, N.J.
Newman, Emanuel D., ... Newark, N.J.
O'Crowley, C. R., ... Newark, N.J.
Owen, Fred. Mooster,. . . . . Morristown, N.J.
Orton, Henry B.,. . . . . Newark, N.J.
Parsonnet, Victor, ... Newark, N.J.
Patterson, William P., ... Newark, N.J.
Price, Nathaniel G., ... Newark, N.J.
Reid, John W.,. . . . . Kearny, N.J.
Reissman, Erwin, ... Newark, N.J.
Robbins, Chas. M., ... Newark, N.J.
Rothseid, Abraham, ... Newark, N.J.
Rubinow, Saul M., ... Newark, N.J.
Schneider, Charles A., ... Newark, N.J.
Silverstein, Wm. R., ... Newark, N.J.
Sprague, Edward W., ... Newark, N.J.
Sproul, O. H., ... Flemington, N.J.
Smith, Edith, ... Cincinnati, Ohio.
Smith, Joseph J.,. . . . . Newark, N.J.
Stage, J. Samuel, ... Newark, N.J.

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Stahl, Alfred,	Newark, N.J.
Strobell, Chas. W.,	New York, N.Y.
Swiney, Merrill A.,	Bayonne, N.J.
Tilton, Wm. R.,	Newark, N.J.
Thayer, Henry W.,	Bloomfield, N.J.
Toppling, Robert S.,	Newark, N.J.
Tovey, David W.,	New York, N.Y.
Valentine, Julius J.,	New York, N.Y.
Ward, William J.,	Newark, N.J.
Washington, Wm. S.,	Newark, N.J.
Wetherell, F. S.,	Syracuse, N.Y.
Whitford, Wm.,	Chicago, Ill.
Winingham, W. D.,	Newark, N.J.
Woolf, B. H.,	Newark, N.J.
Young, John Glenn,	Pontiac, Ill.

Total, 76.

FIRST DAY—*Monday, September* 17, 1917.

Morning Session.—The Association met at 9:30 A. M. in the McCarter Gallery of the Robert Treat Hotel, and was called to order by the President, Dr. John W. Keefe, Providence, Rhode Island, who introduced the Hon. Thomas Raymond, Mayor of Newark, who delivered the following

ADDRESS OF WELCOME.

Mr. President and Fellows of the American Association of Obstetricians and Gynecologists: I am sure it is a great pleasure for me to welcome you to Newark, although there is not much to be said beyond that. This time and crisis of the nation are consuming all our thoughts, and among the work that is being done by America which is so impressive I think to all the world, the work of the physician is certainly taking a high place. That accounts for the comparatively small attendance here. Some members of your profession are at Washington and others are at the front, doing the highest thing that can bé done by men in using their splendid technical knowledge, equipment and experience for the defense of their country.

I have difficulty in pronouncing the name of your Association, so that I cannot throw very much light upon your proceedings, except I know they are extremely valuable, and am glad that you have chosen Newark for your meeting place. I should like to say,

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therefore, since you have come to Newark, the metropolitan city of the state, we know that we can make you feel comfortable and at home, and I trust your stay here will be agreeable, and that your deliberations will be successful and profitable. (Applause.)

RESPONSE TO THE MAYOR'S ADDRESS BY DR. CHARLES L. ILL.

Mr. President and Mr. Mayor: In behalf of the Association, I wish to thank you for your words of welcome. You may not know that our organization is thirty years old, and that our meetings are held in some large city of the East and Middle West annually. Many of our members have done such excellent work that their reputations extend not alone over this country, but all over the world. They are an honor to the organization, we feel proud of them, and I wish to thank you for your address of welcome. (Applause.)

THE PRESIDENT.—Dr. August A. Strasser, who was to have delivered an address of welcome to us, as President of the Academy of Medicine of Northern New Jersey, has been called away temporarily, and Dr. Richard N. Connelly, President of the Northeastern Society of New Jersey, will now address us.

ADDRESS OF WELCOME BY DR. CONNELLY.

Mr. President and Members of the American Association of Obstetricians and Gynecologists: You have just received a cordial welcome from his honor, the mayor, which was of such a character that there need not be any guarantee as to its sincerity.

On behalf of the Academy of Medicine, it becomes my privilege to extend to you a welcome to Newark. There are few things we can say at the present time, except the mere fact that we are proud to have you meet with us, and we wish the members of your Association to feel particularly at home. It is the home of one of the founders of your Society, and a former president, whose work has attracted attention outside of our own state. Here dwell also some of the younger members of your Association, who are actively engaged in practice, and who are alleviating the distressing conditions of our mothers, wives, sisters and daughters. It is difficult for me to tell where to begin or where to end, but you can rest assured that I am commissioned to convey to you our best wishes for a successful and profitable meeting. We are very glad that you have selected Newark as your meeting place this year, and we want to extend to you the feeling and the information that you are among friends, friends who want to exchange friendship for friendship and

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hope to profit intellectually by the ideas that will be exchanged at this meeting.

In addressing your Association on behalf of the Academy of Medicine of Northern New Jersey, perhaps I may be permitted to say a few words regarding our city and local conditions may be in order. Some of you are strangers to our city; others are practically natives. But I am not here to talk about what Newark was or what it is to be. Newark has a water supply that is copious and of high sanitary quality. You can rest assured that a drink of water from our faucets in Newark anywhere in the city is perfectly safe, wholesome and palatable. Its sanitary condition is examined so frequently that I feel that I can assure the members of your Association you may drink this water with perfect safety.

Again, one of the things that conspire to make a city or a community enjoyable or disagreeable to a visitor is the incidence of communicable epidemic diseases. I may say, at the present time Newark is particularly fortunate in that respect, except for a mere outbreak of a mild type of pertussis. Otherwise, we are free from any epidemic disease. That should give visitors a sense of security.

In your visit to Newark, I see that your program is of such an ambitious character that I am afraid you will find very little time for recreation or relaxation. You have some sixty papers on your program to read and discuss. I have no doubt that you expect to devote all your time to scientific pursuits. However, should you find any time for relaxation, I am sure the local committee will be only too glad to suggest the names of places in the vicinity that are worthy of a visit. For instance, we have a beautiful system of public parks extending throughout Essex County. Some of you may be interested in our local hospitals. Newark is devoted to all kinds of manufacturing. It is not our desire to extol the virtues of Newark, or be provincial enough to feel that Newark has any peculiar or unusual qualities; but the members of the Academy of Medicine of Northern New Jersey wish me and desire me to convey to the visiting members and to all members of this Association the information that you are here among your friends. We feel highly honored and proud that you have selected Newark for your meeting place, whereby you, the community, and the whole medical profession will be benefitted by your scientific deliberations.

In conclusion, I sincerely hope that old friendships will be renewed and cemented here at this meeting, and that new friendships will be established which will in the future cause you to look back to the

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1917 meeting in this city with a degree of genuine pleasure. I thank you. (Applause.)

RESPONSE TO DR. CONNELLY'S ADDRESS OF WELCOME BY DR. FRANCIS REDER.

Mr. President, Dr. Connelly, and Fellows of the Association: It is gratifying to see the number of Fellows that are here to listen to these warm words of welcome so graciously spoken. We prize these expressions highly, because they strengthen our feeling in such simple things as friendship and hospitality. They give us that at home feeling, a feeling that takes precedence over all others, especially when we are gathered in somebody else's yard.

In coming to your prosperous city, this Association did not entertain any ultra motive. We simply thought it was a pleasant venture to come here to conduct our meeting, to hold our personal communications within your portals. Our invasion, I assure you, is a most peaceful one. We are only a small band of specialized corpuscles imbued with specific virus for mutual infiltration, floating along in the great artery of medicine, this year here, and the next year somewhere else. We appreciate your warm welcome.

I may say, in conclusion, that among your beloved and skilled professional fraternity, there is one who has particularly ingratiated himself into the hearts of the Fellows of this Association, as one of our former Presidents, and it is this comradeship that is, in a certain measure, responsible for our being here. We are here for work. We are here to speak the truth that we know, and we are here to learn the truths from those who have them to tell. We are here to give knowledge freely and to receive as freely knowledge from others who have it to bestow. We are here to meet each other socially, to promote a kindly feeling, to renew old friendships, and to lay the foundations for new friendships. However, Dr. Connelly, I can assure you, during the periods of relaxation, during our sojourn, we will give material evidence of our appreciation of this most hearty welcome which you have extended to us. (Applause.)

Papers were then read as follows:

1. "Fundal hysterectomy to reduce the menstruating surface," by Dr. Gordon K. Dickinson, Jersey City, New Jersey.

Discussed by Drs. R. T. Morris, Goldspohn, Pantzer, and in closing by the essayist.

2. "Physical conditions in women warranting sterilization," by Dr. Ellis W. Hedges, Plainfield, New Jersey, which was discussed

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by Drs. E. J. Ill, Hayd, Dickinson, Bonifield, T. B. Noble, Darnall and discussion closed by the essayist.

3. "Demonstration of the operation for the cure of complete perineal laceration," by Dr. Edward J. Ill, Newark, New Jersey.

Discussed by Drs. T. B. Noble, Bonifield, Humiston, Goldspohn, and discussion closed by the essayist.

4. "Uterine prolapse," by Dr. Charles L. Bonifield, Cincinnati, Ohio.

5. "The operative treatment of procidentia," by Dr. Arthur T. Jones, Providence, Rhode Island.

These two papers were discussed together by Drs. Bandler, Dickinson, Darnall, Hayd, Branham, Carstens, Goldspohn, and in closing by the essayist.

Dr. Edward J. Ill, as Chairman of the local Committee of Arrangements, said the local profession invited the members of the Association to a luncheon at 1 o'clock in the Robert Treat Hotel, and those who were not members were likewise welcome to partake of the luncheon.

In the afternoon, after luncheon, he announced, the wives and daughters of the local members would take the wives and daughters of the members on a trip through the parks and up to Caldwell, where tea would be served.

Tuesday, at 11 o'clock, automobiles would take the ladies to Mrs. Hensley's farm, where a luncheon would be served.

In the evening entertainment would be provided for the ladies at one of the theaters, both Mrs. Strasser and Mrs. Charles Ill looking after their interests.

6. "Cervical lacerations; their significance for the patient," by Dr. Francis Reder, St. Louis, Missouri.

Discussed by Dr. A. B. Miller, and discussion closed by the essayist.

On motion, the Association took a recess until 2:30 P. M.

Afternoon Session.—The Association reconvened at 2:30 P. M., and was called to order by the President.

7. "Acute dilatation of the uterus," by Dr. N. Stone Scott, Cleveland, Ohio, which was discussed by Drs. Pantzer, E. J. Ill, Humiston, Darnall, J. E. Davis, Carstens, Pantzer, and in closing by the essayist.

8. "Carcinoma occurring in the stump of the cervix following suprapubic hysterectomy," by Dr. Edgar Albert Vander Veer, Albany, New York.

9. "Recurrences after 'five-year period' in carcinoma of the cervix uteri," by Dr. X. O. Werder, Pittsburgh, Pennsylvania.

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These two papers were discussed together by Drs. Carstens, Weiss, Condit, and discussion closed by Dr. Werder.

10. "Radium; further clinical experience," by Dr. Douglas C. Moriarta, Saratoga Springs, New York.

Discussed by Drs. Humiston, T. B. Noble, E. J. Ill and Zinke, after which the discussion was closed by the essayist.

11. "Mixed cell tumor of the kidney weighing 3 pounds in an infant ten months old," by Dr. William E. Darnall, Atlantic City, New Jersey, which was discussed by Drs. J. E. Davis, Zinke, and in closing by the essayist.

On motion, the Association took a recess until 7:30 P. M.

Evening Session.—The Association reconvened at 7:30 P. M., and was called to order by the President.

12. "The end-results of the treatment of inoperable uterine cancer by heat," by Dr. James F. Percy, Galesburg, Illinois.

Discussed by Drs. T. B. Noble, Dickinson, and in closing by the essayist.

13. "Gall-bladder troubles complicating diseases of the internal genitalia," by Dr. J. Henry Carstens, Detroit, Michigan.

14. "Gall-bladder surgery," by Dr. Joseph H. Branham, Baltimore, Maryland.

These two papers were discussed together by Drs. Hayd, Goldspohn, Keefe, Bell, T. B. Noble, and discussion closed by the authors of the papers.

15. "The left fallopian tube and intestinal stasis," by Dr. Douglas Hunt Stewart, New York City, New York.

16. "Giant colon treated by colectomy," by Dr. Thomas B. Noble, Indianapolis, Indiana.

Discussed by Drs. Branham, Van Amber Brown, and in closing by the essayist.

On motion, the Association adjourned until 9:00 A. M., Tuesday.

SECOND DAY—*September* 18, 1917.

Morning Session.—The Association met at 9:00 A. M., and was called to order by the President.

17. "The treatment of appendicular abscess," by Dr. William A. B. Sellman, Baltimore, Maryland.

18. "Left-sided appendicitis in situs inversus totalis," by Dr. Julius H. Jacobson, Toledo, Ohio.

These two papers were discussed together by Drs. R. T. Morris, Dickinson, Carstens, Bonifield, Goldspohn, Branham, and discussion closed by the essayists.

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19. "The ductless glands in gynecology and obstetrics," by Dr. Samuel W. Bandler, New York.

20. "Thyroid extract in gynecology," by Dr. Herman E. Hayd, Buffalo, New York.

21. "A consideration of the interrelationship of the female sex glands and hypophysis," by Dr. James E. King, Buffalo, New York.

These papers were discussed by Drs. Van Amber Brown, Carstens, Percy, J. E. Davis, Pantzer, Zinke, and discussion closed by the essayists.

At this juncture, the First Vice-President, Dr. Francis Reder, took the Chair, and President John W. Keefe, Providence, Rhode Island, delivered his address.

22. "Address of the President," by Dr. John W. Keefe, Providence, Rhode Island.

23. "The technic of ureterovesical anastomosis, with moving picture demonstration of same," by Dr. Henry D. Furniss, New York City, New York.

This paper was discussed by Drs. Hayd, Goldspohn, A. B. Miller, and in closing by the essayist.

24. "The influence of pregnancy on the development, progress, and recurrence of cancer," by Dr. William Seaman Bainbridge, New York City, New York.

Discussed by Drs. Dickinson, Weiss, E. J. Ill, J. E. Davis, Carstens, A. B. Davis, and in closing by the essayist.

25. "The causes of death in child-birth; a discussion of the maternal mortalities in 100,000 confinements at the New York Lying-In Hospital," by Dr. James A. Harrar, New York City, New York.

26. "Maternal and infant mortality in midwifery practice in Newark," by Dr. Julius Levy (by invitation), Newark, New Jersey.

These two papers were discussed together by Drs. Zinke, Bell, Humiston, Dickinson, Carstens, Percy, and discussion closed by the essayists.

On motion, the Association adjourned, and went into executive session. (See minutes of executive sessions.)

THIRD DAY—*September* 19, 1917.

Morning Session.—The Association met at 9:00 A. M., and was called to order by the President.

27. "Cesarean section in the pre-eclamptic stage," by Dr. John W. Poucher, Poughkeepsie, New York.

28. "The conservative treatment of eclampsia," by Dr. Ross McPherson, New York City, New York.

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29. "The treatment of eclampsia," by Dr. Asa B. Davis, New York City, New York.

30. "The indications for interference in pre-eclamptic toxemia," by Dr. William G. Dice, Toledo, Ohio.

These four papers were discussed together by Drs. Zinke, Potter, J. E. Davis, Percy, Hayd, Pantzer, Carstens, Harrar, Rongy, H. C. Bleyle, and discussion closed by the essayists.

31. "The alcohol drain in septic cases requiring Cesarean section," by Dr. Charles L. Ill, Newark, New Jersey.

Discussed by Drs. Strasser, Rongy, Goldspohn, E. J. Ill, Percy, Weiss, and in closing by the essayist.

32. "Ectopic gestation based upon a study of one hundred cases," by Dr. Abraham J. Rongy, New York City, New York.

Discussed by Drs. Miller, Branham, E. J. Ill, Brown, Zinke, Carstens, and discussion closed by the essayist.

On motion, the Association took a recess until 2:00 P. M.

Afternoon Session.—The Association reconvened at 2:10 P. M., and was called to order by the First Vice-President, Dr. Francis Reder.

33. "Should the uterus be removed when it becomes imperative to interrupt pregnancy?" by Dr. Emery Marvel, Atlantic City, New Jersey.

Discussed by Drs. Hedges, A. B. Miller, Rongy, and in closing by the essayist.

34. "A further study of the use of chloroform in obstetric practice," by Dr. Isadore L. Hill, New York City, New York.

Discussed by Drs. Pantzer, J. E. Davis, and in closing by the essayist.

35. "Retained secundines; a study of etiologic factors," by Dr. James E. Davis, Detroit, Michigan.

Discussed by Drs. Goldspohn, Pantzer, and in closing by the essayist.

36. "Notes of methods of overcoming the mechanical obstacles to pregnancy," by Dr. Robert T. Morris, New York, city, New York.

37. "Version, with a report of one hundred and fifty cases since September, 1916," by Dr. Irving White Potter, Buffalo, New York.

38. "Diagnosis and management of narrow pelvis," by Dr. E. Gustav Zinke, Cincinnati, Ohio.

These three papers were discussed together by Drs. Zinke, Van Amber Brown, E. J. Ill, A. B. Miller, Swiney, A. B. Davis, Rongy, Hayd, and discussion closed by the essayists.

39. "A case of gangrene of uterine fibroid following parturition;

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panhysterectomy," by Dr. Ralph Waldo, New York City, New York.

40. "Osteoma of the descending ramus of the pubes and ascending ramus of the ischium obstructing the pelvic outlet; pregnancy; removal of the osteoma," by Dr. James N. West, New York City, New York.

These two papers were discussed together by Drs. J. E. Davis, Pantzer, and discussion closed by Dr. Waldo.

THE PRESIDENT.—We have finished the scientific part of our program, and it now remains to install the newly-elected officers.

I will appoint Drs. Pantzer and Bell to escort the newly elected President to the platform.

President Keefe, in introducing his successor, said: I know of no man to whom I would rather turn over this gavel than to the gentleman whom you have elected President—Dr. Goldspohn. (Applause.)

Dr. Goldspohn, in accepting the presidency, said, Gentlemen: Honors have been preceded by duty, and duty impels me to refer to the future. We all agree that this year we have had an excellent program, well partaken of and well digested. We know that in nature we recognize the law that there is no such thing as standing still; we either go back or we progress. That means next year we will either have a poorer meeting or a better one than we have had this year. As we are progressive, true Americans, inspired with the noble sentiments that have been referred to in this meeting, we certainly do not want to go backward; but, gentlemen, we are somewhat handicapped for the next year. Nearly all of us shall be short in assistants; we will have to attend to some minor details ourselves which heretofore we have delegated to our assistants, and, therefore, the amount of time at our disposal for research and study and the contributions we would like to make here will not be so abundant. It becomes necessary for each one of us here to make plans for the contributions we will endeavor to make to next year's meeting. I sincerely hope that none of us will be found to be slackers when the summons comes from our Major-General—the Secretary, Dr. Zinke. Trusting that this may be our resolve, I am ready to proceed with any further business the Association may have to transact.

DR. JOHN W. KEEFE.—I move that we extend a vote of thanks to the local Committee of Arrangements, and particularly to Dr. E. J. Ill as Chairman; also that our thanks be extended to the management of the Robert Treat Hotel for the many courtesies and kindnesses extended to us during the sessions.

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Seconded by several and unanimously carried.

PRESIDENT GOLDSPOHN.—Is there any further business to come before the meeting?

DR. KEEFE.—I move that we now adjourn to meet in Detroit, Michigan, in 1918.

Seconded and carried.

The Association thereupon adjourned.

E. GUSTAV ZINKE, M. D., *Secretary.*

EXECUTIVE SESSIONS.

Monday, September 17, 1917.

The President, DR. JOHN W. KEEFE, in the Chair.

The minutes of the Executive Council meeting of September 16, 1917, were read and approved.

Dr. Bonifield moved that Dr. David W. Tovey be elected to membership.

Seconded and carried.

Dr. Bonifield moved that the Secretary be instructed to send telegrams of sympathy to Dr. Charles A. L. Reed and Dr. Magnus A. Tate, on account of illness, with best wishes for a speedy recovery.

Seconded and carried.

The Secretary presented his annual report of the money he had received and turned over to the Treasurer.

Dr. Bonifield moved that the report be accepted and referred to the Auditing Committee.

Seconded by Dr. Pantzer and carried.

Dr. Hayd presented his annual report as Treasurer, showing a balance in the bank of $1499.53, drawing four per cent. quarterly interest.

Dr. Bonifield moved that the books and vouchers of the Treasurer and the Secretary be referred to the Auditing Committee.

Seconded and carried.

The President appointed as Auditing Committee Drs. Edward J. Ill, Charles L. Bonifield, and Hugo O. Pantzer.

On motion, the Executive Session adjourned.

Tuesday, September 18, 1917.

THE PRESIDENT in the Chair.

THE PRESIDENT.—We will listen to the report of the Auditing Committee.

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DR. EDWARD J. ILL.—We have examined the books of the Secretary and Treasurer and have found them correct and satisfactory in every particular.

THE PRESIDENT.—What will you do with the report?

DR. CARSTENS.—I move that the report be accepted and placed on file.

Seconded and carried.

THE PRESIDENT.—The next order of business is the selection of a place of meeting for the coming year.

DR. CARSTENS.—I take great pleasure in inviting the Association to hold its next meeting in Detroit.

DR. ZINKE.—I move that we accept the invitation of Dr. Carstens to meet in Detroit.

DR. BAINBRIDGE.—I second the motion. (Carried.)

THE PRESIDENT.—Now we come to the election of officers. Nominations for President are in order.

DR. CARSTENS.—At the request of quite a number of the members of the Association, I rise to nominate a gentleman who has been with us a great many years and has been a regular attendant. He is one of our faithful members. He has not only taken great interest in, but has contributed freely to the proceedings in the way of reading papers and discussions. Therefore, I take great pleasure in nominating Dr. Albert Goldspohn, of Chicago, as the next president of this Association.

The nomination was seconded by Dr. Humiston.

Dr. A. B. Miller moved that the nominations be closed; that the rules be suspended and the Secretary instructed to cast one ballot for the election of Dr. Goldspohn.

Seconded and carried.

The Secretary cast a ballot as instructed and Dr. Goldspohn was declared duly elected.

Dr. Goldspohn said: Mr. President and Fellows of the Association: It is with no little diffidence that I respond to this great honor that you have conferred upon me. The gentleman who nominated me is more complimentary than the facts really warrant. I have not been so regular an attendant as Dr. Carstens says. Twice I have been absent from the meetings on account of prolonged sickness and at other times for less importan treasons. Furthermore, I do not regard myself as belonging to the galaxy of our more luminous stars; therefore, gentlemen, under such circumstances I hope you will accept my appreciation of your kindness.

The Presidency of this Association is much more than an honorary

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matter. This Association I regard as the highest tribunal in its line in this country. It is the clearing house where we in true altruistic manner bring our new achievements, our experiences, our inventions, and offer them freely for our mutual good and the good of humanity, without limiting their use by such a thing as a patent or a copyright. We bring here our achievements to be judged. We, as human beings, naturally think too much of our child in a scientific sense, and we bring our products here to have the truth sifted out from the error, and the non-essentials likewise incorporated in our hobby. It is also the shrine where we come to get inspiration.

The honest and conscientious practice of medicine is not resting on flowery beds of ease; it is attended by many hardships, many adversities, many trials, so that our efforts are not always compensated by pecuniary rewards; but there are other motives. There are live wires of scientific interest that impel us, that give us strength, that lead us to overcome hardships, unpleasant experiences, so that these things fall by the wayside as inconsiderable in view of the scientific subjects that impel our intelligence and enthusiasm.

During the next year, gentlemen, we shall be handicapped in our literary and scientific work at home by our engagements, and by our national duties; but believing that these scientific wires of interest are sufficiently alive in the members of this organization to turn out and give us a good meeting at Detroit next year, notwithstanding our national embarrassments, I graciously accept your nomination. (Applause.)

THE PRESIDENT.—Nominations are in order for the office of First Vice-President.

Dr. Humiston nominated Dr. William Seaman Bainbridge for First Vice-President.

Dr. Hayd moved that nominations be closed; that the rules be suspended and the Secretary instructed to cast one ballot for the election of Dr. Bainbridge as First Vice-President.

Seconded and carried.

The Secretary cast a ballot as instructed, and Dr. Bainbridge was declared duly elected.

THE PRESIDENT.—Nominations for Second Vice-President are in order.

Dr. Reder nominated Dr. Arthur T. Jones, Providence, Rhode Island, for Second Vice-President.

Dr. Hayd moved that nominations be closed; that the rules be suspended and the Secretary be instructed to cast one ballot for Dr. Jones as Second Vice-President.

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Seconded and carried.

The Secretary cast a ballot as instructed, and Dr. Jones was declared duly elected Second Vice-President.

THE PRESIDENT.—Nominations for Secretary are in order.

DR. BAINBRIDGE.—I nominate Dr. Zinke to succeed himself, and move that the rules be suspended and that the First Vice-President, Dr. Reder, cast the ballot of the Association for Dr. Zinke.

Seconded and carried.

Dr. Reder cast a ballot as instructed, and Dr. Zinke was declared elected Secretary.

THE PRESIDENT.—Nominations for Treasurer.

DR. EDWARD J. ILL.—I desire to nominate Dr. Hayd to succeed himself as Treasurer of this Association; that the rules be suspended and the Secretary be instructed to cast the ballot of the Association for Dr. Hayd.

Seconded and carried.

The Secretary did as instructed, and Dr. Hayd was declared duly elected Treasurer.

THE PRESIDENT.—Nominations for the Executive Council are in order. Drs. Miles F. Porter and Charles N. Smith retire this year.

DR. JAMES E. DAVIS.—I take great pleasure in nominating Dr. A. B. Miller, Syracuse, for member of the Executive Council.

DR. HAYD.—I move that nominations be closed, and that the Secretary be instructed to cast the ballot of the Association for Dr. Miller as member of the Executive Council.

Seconded and carried.

The Secretary did as instructed, and Dr. Miller was declared duly elected.

The retiring President, Dr. Keefe, is the other member of the Executive Council.

President Keefe called attention to the desirability of selecting eligible men from the large cities not as yet represented in the Association as members. He thought this could be done by notifying the Secretary of any desirable candidates, and by instructing the Secretary to communicate with them.

The Executive Session then adjourned *sine die*.

E. GUSTAV ZINKE, M. D., *Secretary*.

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PAPERS

READ AT THE

THIRTIETH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT

NEWARK, N. J.

SEPTEMBER 17, 18, AND 19, 1917

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PRESIDENT'S ADDRESS.

BY

JOHN W. KEEFE, M. D., LL.D., F. A. C. S.,

Providence, R. I.

To be accorded the opportunity of presenting a Presidential Address before this National Association, whose roll of membership comprises so many distinguished men, is an honor of which I am more deeply conscious than I can well express; and yet, though my words be inadequate, I assure you that my feelings of responsibility and of gratitude are profound. That you have deemed me worthy is my encouragement.

The Founders of this Association builded far better than they knew, for they began a work, which, as our transactions testify, constitutes a monument of stupendous thought and effort, to which we may point with very pardonable pride.

Though still relatively young in years, we are yet rich in accomplishment. The cosmopolitan and democratic character of our Society creates an atmosphere, which encourages the seeker after truth, in our chosen field of labor, and gives him that mental stimulus which leads to fruitful endeavor.

Year by year, we constitute a forum, where original ideas are brought for discussion, new operations described and even visualized on the screen, and the conclusions derived from personal experiences offered for friendly criticism. Each Fellow is conscious that he is speaking to an audience, whose sympathies are awake to anything worth while, which he may have to offer.

While in his local field of activity, a man may hesitate to express his views freely because of social or political reasons, or through fear of hostile or unjust criticism; here, he may set forth his opinions without fear or favor. From the East and the West, the North and the South, men bring to us the ripe fruits of their labors, knowing full well that our appreciation will ever be equal to their merits, and when their various and often-times antagonistic views are debated in friendly rivalry, they feel that here indeed is a means for obviating any possible tendency toward provincialism; and hence we

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become a liberalizing influence in medicine. This, you will agree, is no small accomplishment for any society.

By means of our yearly meetings the older Fellows are heartened to continue their efforts with greater energy; while the younger are inspired to emulate and even, if possible, to surpass the notable men who have been and are Fellows of this dignified body, as well as leaders of the medical thought of their time; and so, with whatever misgivings one may have come, one cannot but return filled with the laudable ambition of applying the knowledge here imbibed, thereby making for greater efficiency.

While we are prodigal of appreciation for sound ideas, woe to the individual who presents theories which do not ring true; for he is certain to learn that his mental children are doomed to speedy annihilation, and yet, criticism, though caustic, is ever of the theory presented, never of the man. It is but human, that every one should have his periods of gloom and depression, and that he should require as a stimulus, the approbation of his confrères for work well done. Be not then sparing of your praise, since it often spurs the recipient to greater efforts.

> "Who strives with earnest will has half attained
> For in the striving, richer life is gained."

From a somewhat varied experience, I think I may truly say that there is no society where a more kindly spirit prevails than in this, or where a more lively interest is taken in the scientific part of the program. The array of papers to be presented at this, our thirtieth meeting, bids fair to equal the high standard set at former gatherings. Our splendid program is largely due to the tireless and indispensable efforts of our valued Secretary, Dr. E. Gustav Zinke, to whom, I am sure, we all pay the tribute of love and gratitude.

The training of the doctor renders him unlike men engaged in secular affairs; oftentimes, he is a dreamer, an idealist and an altruist, as well as a disciple of the healing art. He has the spiritual side of his nature developed, not unlike that of the poet, the painter, the musician and the sculptor. We, too, have heard at times, the remark, made in a disparaging manner, that a certain surgeon possessed merely manual dexterity, little heed being given to the thought that his facility in the use of his hands must have been due to brain dexterity. As Sir Clifford Allbutt so well says. "We have always been prone, and not in universities only or chiefly, to forget, that the temple of education cannot be built without hands. These

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subtle ministers are directed by the mind; but by the mind which they themselves have created, as in the State, we are directed by the government we ourselves have established. So long as nerve and muscle are growing, the hand—and by the hand I now signify every instrumental limb of the body—seems to achieve a little more than the mental suggestion; it explores, and often in each new use or adventure, discovers a little wider range of function than the will had dictated; of these gains of experience, time after time, conceptions are returned to the brain, and there registered in multiplications of structure; and thus gradually, from the beginning, by each successive function of such limbs, by practice, as we say, both ability and capacity are tentatively developed, and things outward to draw the inward quality after them. Thus the periphery, or growing edge of the whole sphere of bodily function is the mind's workshop."

Now, it would not be difficult to show, from the history of medicine, that the education of the mind has always accompanied the education of the hand; the hand being, to adapt a phrase of Burdon Sanderson's, "The scientific instrument of the surgeon." So true is this, that when the mind languishes, the cleverness of the hand is proportionately diminished, and when the hand fails in its ministrations, the mind ceases to grow; and so it is that the surgeon, if he would be a skilful craftsman, must of necessity be first a skilful thoughtsman. For in what consists the surgeon's manual dexterity, if it be not in the deft application to the diseased human body, of the principles of anatomy, physiology and pathology; converting his concepts into acts, he thus becomes, as it were, the mediator between the theories of the schools and the lives of his patients.

Let us, therefore, banish from our minds, if indeed we ever entertained it, the superficial and quite erroneous view that mechanical facility alone is the chief attribute of a successful surgeon.

How far, think you, would mere manual dexterity have carried a Murphy, a McBurney, a Bigelow or a Senn, did they not possess also the wide sweep of intellectual vision, which opened to them hitherto unexplored fields for research and gave them that mental alertness, which was the prerequisite of their notable achievements.

I have often marveled at the power of imagination and of sustained thought in the men who have devised our unique operative procedures. I do not now refer to those operations, the simplicity of which is obvious, but rather to those other subtle and complicated maneuvers, which tax to the utmost the ingenuity of the surgeon, and which correct the defects or perversions of nature by the assistance of art.

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Hence I observe that the cunning of the hand is but the outward and visible sign of the power of the brain that directs it; and therefore it is, that nothing in medical science is alien to the surgeon; nothing comes to him amiss, if by it his mental horizon be widened. There is no place in modern surgery for that type of narrow specialism which cramps the mind's development; while the customary and unfortunate separation of medicine from surgery is as false in theory as it is vicious in practice.

As with the hand, so also with the eye; mind and eye work together and constantly act and react upon each other. He who looks at things with the eye of intellect sees them with a new precision and accuracy. He is driven by the intellect itself, so to see them. Intent on probing into the nature of things, on divining their purpose and composition, and whence they came and whither they are going, and a thousand other facts about them, the intellect must needs in all these matters employ the eye to collect data for it; this in turn results in a new discernment and discriminative power, imparted to the sense of sight. So that the desire of the mind to distinguish accurately and define exactly, grows by degrees into unconscious properties of vision; and seeing with the mind, as it may be called, becomes seeing in a new and more positive sense of the word. The power of rapid and intuitive vision found in great surgeons is, or so at least it seems to me, the power of seeing with the mind, as distinguished from the mere seeing with the eye.

These three then, hand, eye, mind, working in mutual helpfulness, constitute the ideal surgeon as I am trying briefly to picture him to you. And if to be a surgeon is to possess these things in their highest development, who will deny that our constant need is to strive for their greater perfection?

I said that the cunning of the hand is but the outward and visible sign of the power of the brain which directs it, and that the surgeon who would be a good craftsman must first be a good thoughtsman. Let us now dwell briefly upon some of the implications of this idea.

No one, I suppose, will deny that there is a thread of continuity binding together into an organic whole all the various departments of medicine. Each department severally, does but give us a certain aspect—some partial view of the truth, and all of them taken together are essential, if we would attain to a philosophic grasp of things. Now, it is expected of us that, as surgeons, we should be specialists, but let us beware that we do not at the same time become exclusivists. A specialist is a man who confines his practice to one thing; an exclusivist is a man who confines his knowledge to one

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thing. Specialism, by the very fact of its being such, is too apt to close the windows of the mind and to rob it of its flexibility. How painfully conscious we are at times, that our judgment is at fault, because we have forgotten, if indeed we ever knew, the complete data necessary to it. It is a truism to say that surgery demands an intimate knowledge of anatomy, but is it not equally true, that surgery demands a similar knowledge of physics and chemistry, of physiology and even of psychology? Structure and function go always together; structure being the framework of function, and function the structure at work. When we seek to understand function, do we not speak the language of chemistry, physiology and psychology?

The limitations of our human faculties and abilities compel us to a division of labor; and here lies the pitfall that besets our progress. Our constancy to one thing too frequently spells neglect of the rest; and the very intensity of our vision narrows the sweep of it.

Surgery, after all, is a method of treatment, and if such it be, the surgeon's knowledge, ideally at any rate, should be extended to every condition requiring treatment.

This, I am well aware, is impossible of attainment by any individual man, however great his intellectual endowments may be; hence the practical necessity for coöperation between workers in different fields. The surgeon needs the chemist, the bacteriologist, and the internist, quite as much as they need him. The time is past when one man can play so many parts. As in commerce, combinations are the order of the day, so in medicine, more team work is the desideratum of the present.

The conservation of human life, the relief of pain, the prevention and amelioration of disease, is not this a glorious heritage that we of the medical profession possess? "One man practised in medicine verily outweigheth many other men." This compliment greets the medical profession at the rise of Greek medicine, and posterity has never recalled it. Throughout the ages men practised in medicine have outweighed other men; and why? Because from the time when they first dressed the wounds of Homeric heroes until the present day, they have been in human society a conservative and constructive force. While others have pulled down, they have builded up; in the midst of strife, they have pursued the arts of peace; and even to hate they have shown the countenance of love. It was, indeed, by no mere rhetorical flourish, that Robert Louis Stevenson called the physician, "The flower of our civilization: because he has shared as little as any, in the defects of the period, and has most notably exhibited the virtues of the race."

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Not in medicine only, but in life generally, tradition and sentiment are beacon lights which guide us on the ocean of life. Who ever tires of listening to the tales of hardy seafaring men? How manly the tradition that a sailor should never hesitate to risk his own life to succor a seafarer in distress, and how touching the sentiment there enshrined! How these glowing accounts of brave deeds of self-sacrifice thrill and inspire us. Yet, to-day, these long cherished ideals seem to have been forgotten, and the S. O. S. call too often remains unanswered. How long before men will again have instilled into their minds, that "Greater love hath no man, than to lay down his life for his friend?"

In this tragic world war, when man's inhumanity to man makes countless thousands mourn, when human life is held at naught, and human brains are racked to devise new instruments of destruction, each more deadly and revolting than the other, is it not comforting, nay inspiring, to feel that there is in the world a thoughtful and earnest body of men, who, like the men of the sea, imbued with high ideals, are ministering to the wants of friend and foe alike; who fear nothing so much as failure in service, and who constantly endure great personal sacrifices to increase their knowledge of science to the end that its beneficent ministrations to the sick and wounded may return them again to health and happiness.

I am thinking of Walter Reed in Cuba, of Ronald Ross in Africa, of Laennec in Paris, of Jenner in Gloucestershire, and of that goodly host of other truly great but modest heroes, whose lives were as replete with good works as they were scanty of general recognition or reward.

I am thinking too, of those hundreds of brave men, members of our guild, who in the last three years, have gone to their deaths amid a shower of bullets, while they were easing the pain or comforting the last moments of some stricken soldier.

They have no place in storied page,
No rest in marble shrine.
They are past and gone with a vanished age,
They died and made no sign.
But work that shall find its wages yet
And deeds that their God did not forget,
Done for His sake divine.
These were the mourners and these shall be
The crowns of their immortality.

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Here is a theme worthy of our sober reflection, worthy, too, I may add, of the pen of poet or the painter's brush.

For, after all, the most important thing about a man is his standard of values. What he lives by and what, if need be, he is ready to die for: and was it not, perhaps, because they recognized his high moral standards, his genius for self-sacrifice and renunciation, that the Greeks and all other peoples, have held the physician in such universal esteem?

In the search for wealth and power, men are forever forgetting the enduring dignity and worth of human life, and it would seem that by some benevolent dispensation of Providence, physicians have been raised up even on the battlefield to remind them of it.

What statesman or warrior or merchant prince has conferred upon humanity gifts that are indispensable? But who can say that mankind can spare the gifts of Semmelweis, of Lister or of Pasteur? War of man against man we can well dispense with; but war of man against disease we shall always welcome as an alleviation of our manifold human sufferings.

When the present lust for blood has passed, leaving the rancor of hatred in the hearts of many, what an inestimable amount of good the medical profession, with its lofty aspirations, may accomplish by teaching mankind once more the value of human life.

Other lessons may also well be learned. We were wont to believe that liberty was license, and forgot the fact that obedience to law is liberty. We sought privileges without realizing that whenever we are granted a privilege, there is also a duty imposed upon us. This is a day of sacrifice for each and every one of us, and it is sacrifice alone that calls forth the highest qualities that man possesses. We were rushing along in a mad race for material things, with the consequent lavish and frivolous expenditure of money, seeking happiness in luxurious living; but we are now being chastened, and I am certain we will emerge from the fire sobered and freed from the worship of many false gods.

And so I close by saying that the physician has ever stood forth as a benefactor of the race, not chiefly, or solely in a material way, but rather in a spiritual sense. His has been, and is, the high privilege of conserving life rather than of destroying it. May we, too, be worthy of our precious heritage, striving always—

"To set the cause above renown,
To love the game beyond the prize,
And dearer yet the brotherhood
That binds the brave of all the earth."

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FUNDAL HYSTERECTOMY TO REDUCE THE MENSTRUATING SURFACE.

BY

GORDON K. DICKINSON, M. D., F. A. C. S.,

Jersey City, N. J.

PHYSICIANS of a generation or so ago, not having developed specialties, studied the body entire. It is true that some sat on stools and applied silver nitrate to the cervix and called themselves "gynecologists," but the brains of many talked eloquently of each tissue and organ and also of the social or business life. They viewed each department from a high plane, but in treatment selected one organ in clinical research.

For conscientious diagnosis each woman must be studied not only as to the function of each organ of the body, whether pelvic or other, but as to her psychy, maternal instincts, social life and occupation, for the woman must be known as well as the womb.

Sex is a matter of broad significance. Narrowly we look upon it as a condition of the generative organs. By biologists these are considered simply as primary sexual characteristics, but the secondary sexual characteristics are even as important as an indication of sex life, such as temperament, sex instincts, maternal love, form of the larynx, swelling of the thyroid gland, position of hair on the abdomen, and the soprano voice, for sex penetrates the whole person.

In every-day observation it cannot but be noticed that sex development varies in each female. Not infrequently do we find some of the evidences of contra-sexuality. Many girls early develop a down on the upper lip. We often see women with moustaches and imperfect whiskers, and many women have hair around the nipples and on the abdomen coming up to the navel. As a morbid tendency we find the soubrette voice, common in our concert halls, which is said to be an imitative masculine type.

Emigrants from the lower countries of Europe, where the call of the germ plasm is less disturbed by conventions, seldom show any evidences of retrograde or masculine tendencies. When married, if asked if they have any children, their reply is always, "Sure!" But in this country, at least, whether due to the climate or the type of social life, there seems to be a tendency to degenerate. The true

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sexual characteristics (physiological and psychological) are often not uniformly developed, and we have coming to our clinics not always the true woman with perfect correlation of internal secretions and nerve tone, but women with evidences of a starvation of tissues because of defective internal secretions from the sex glands.

The normal ovary is full and plump. It contains two sets of tissues which activate the different generative and other organs of the body; the corpus luteum has its effect upon the uterus, but there is an epithelioid tissue disseminated through the ovary emitting a substance which is potential for all that which goes to make up femininity. Its action is inversely with that of the hypophysis. As its function is interfered with, diminished, or congenitally absent, so does the hypophysis enlarge, and allow of a development more nearly on the masculine scale, or, if not exactly that, a perversion which is weakly feminine.

The sympathetic system which is more largely developed in the female than in the male is another relic of antecedent biological life. The disturbance of its innervation often leads to mysterious uncontrollable reflexes, which vary according to the paths of resistance in different parts of the body.

There seem to be three portions of the body very closely linked, not only as to the function of their tissue, but the subconscious life of the individual: the brain, thyroid gland, and sex glands. Anything which interferes with the systematic working and conventional action of these organs interferes with personality, sense of comfort, intellect, and one's subconscious life.

The gynecologist of to-day cannot sit on a stool, operate and philosophize on the pelvis. He must be a neurologist. He must be in close touch with sociological affairs. He must look upon the woman as a being in which every cell is feminine and needs during the greater part of her life the tonic effect of her potential internal secretions.

Surgeons have been growing more and more conservative. Less surgery is being done which mutilates, Nature's ability to repair and to restore being recognized and employed. Nevertheless, the surgeon is no exception to the rule that where there is power it is prone to be used. Too often do we remove the uterus instead of merely the tumor, a tube capable of restoring itself, and interfere with the circulation of the ovaries by careless surgery!

Sometimes after confinements, either from debility of the general system or exhaustion of nerve fibers, the uterus fails to contract in the five or six days allotted to the principal part of involution. In-

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fections arise, which are more or less severe. In the milder cases there is a cessation of the involution process and the development of a large fibro-fatty organ, which through weight and congestion leads to a train of symptoms known as the "uterine syndrome." An infection somewhat more severe sets up an interstitial inflammation resulting in fibrosis of the uterus, an organ not over large, but hard with a condensation of fibrous tissue around the blood-vessels. Then, again, there are cases where the entire substance of the uterus is replaced by a mass of whirls, each whirl resembling the annular rings of sections of a tree.

Of these several processes the large fibro-fatty uterus encourages the hyperemias with hyperplasia of the endometrium. The fibrotic uterus, or the one with arterial fibrosis, is associated with an atrophic condition of the endometrium. In the former case the woman may become pregnant but tends to abort. In the latter, she is sterilized. In both cases we have menorrhagia, prolonged periods, excessive bleedings, and an evacuation of clots, and, particularly in the cirrhotic type of uterus, there is often a continued leakage.

In the beginning Nature will make blood as rapidly as she wastes it, but the time comes when the blood-forming organs become exhausted, then the balance turns over and anemia, low blood pressure and increasing debility supervene, and according to the mental disposition and therapeutic habits of her physician will the patient be treated. There are those who to-day will give iron; those who have faith in hydrastis; those who will try stypticin. In the meantime, blood is wasted and time passes, and when the case comes into the hospital for the surgeon's care the plight is often extreme.

There are four methods of surgical treatment in vogue and their selection depends upon how the surgeon's mind has been trained and largely upon the same faith in surgical therapy that we see so sadly expressed in the medical. The first thought of many is curettage, but any surgeon who has carefully curetted the interior of the uterus before removing it, then on the palm of the hand has split it open and studied the interior, cannot but realize the inefficacy of the curettage—how the surface is lacerated, the mucosa incompletely removed, rendered liable to sloughing processes, and how very rarely he is able to make a clean job of the fornices and fundus. As a diagnostic procedure, McMurtry is correct in claiming that it not infrequently fails.

A study of the profession leads one to the opinion that the operator curetts often and the surgeon seldom, and that one obtains a knowledge of the surgeon's standing by the infrequency of his curet-

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ments. In this trouble, at least, hemorrhage is not controlled, except for a time.

Boldt's method of the introduction of a solution of chloride of zinc has established a value in his hands, but, being an office procedure and one that can be done in the home, its use may be taken up by the tyro, and from our experience with strong solutions of zinc there is a possibility of too great a sloughing of the interior, uterine infections, and perhaps worse. There is no objection to its employment by the most competent, but it should not be used by any other.

Those who have radium, and employed it, have met with success; but the expense, and the difficulty of purchasing it, make its use very limited.

In June, 1915, after having performed for persistent hemorrhage a long series of horizontal amputations of the uterus somewhat above the internal os, it occurred to the writer that less surgery might be done through another type of operation with a smaller liability of interfering with the circulation of the ovaries. Gradually the idea came that by a fundal hysterectomy, excising a wedge-shaped piece of the womb, removing half or more of the endometrium and reducing the menstrual surface in part, the woman would not be immediately or later unsexed, not deprived of her monthly period, and neither the body nor the mind feel the shock of mutilative surgery. So, step by step, the operation to be described was evolved.

However, as soon as it became evident that something a little unusual had been developed, the literature was searched. It was found that in 1913 Buettner, of Switzerland, described a somewhat similar procedure but for pus tubes. He did a hysterectomy, then resected not only a wedge-shaped portion of the uterus, but the tubes in addition, leaving the ovaries, then bringing his flaps together. Crossen in his "Operative Surgery," 1915, speaks of a wedge-shaped resection of the fundus for fibroid and fibromyoma, reducing the menstrual surface, but his limit was that of the growing tumor, and not a physiological limit.

The plan that has been selected here is always *per vaginam*. After placing a purse-string around the anus, so that during the operation there may be no puffing out of fecal matter from that vent, a clip is applied to each labium, which is retracted. Into the vagina is poured an ounce or more of 3.5 per cent. tincture of iodine, this is allowed to remain while the patient is being draped. When everything is ready, a volsellum is put on the cervix and it is brought down. A transverse incision is made anterior to the cervix, the bladder separated from the uterus, the peritoneal cavity opened, and

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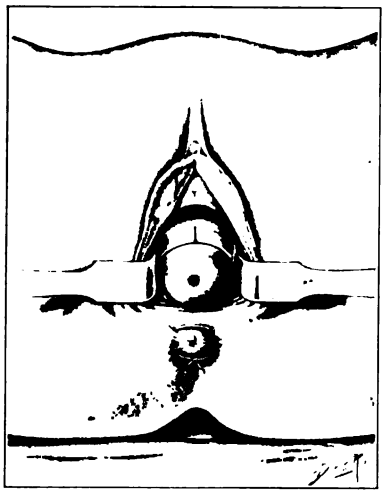

FIG. 1.—Fundus brought into vagina and clamps placed on adnexæ for retraction and hemostasis.

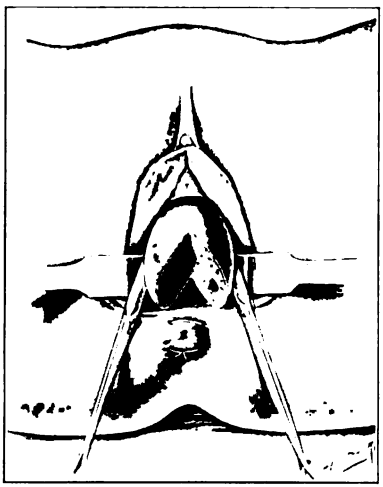

FIG. 3.—Resection made and flaps ready to be sutured together.

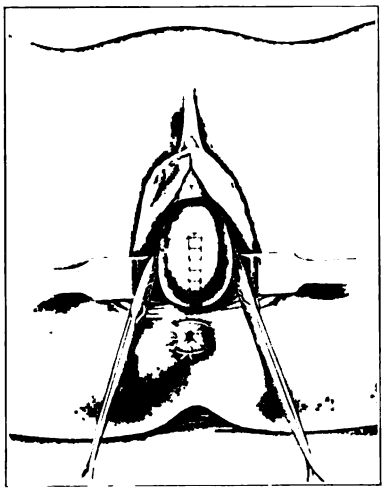

FIG. 2.—Line of fundus resection varies with condition of uterus.

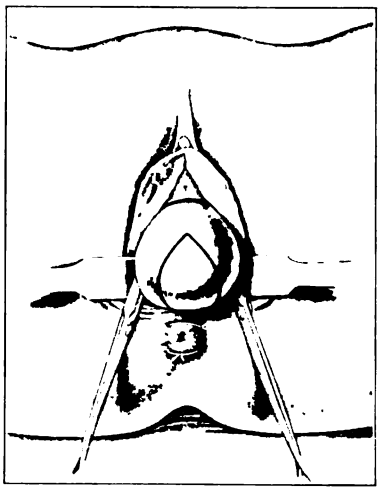

FIG. 4.—Uterine flaps brought together. Sutured by button-hole stitches, deep and peritoneal.

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the fundus very easily brought into the vagina. We now have an inspection of it and the adnexa. Clips are firmly but gently applied alongside the uterus to slightly compress the circulation and act as retractors. A "V" shaped incision is then made through the substance of the womb for a varying depths, depending upon the extent of the disease as estimated by the clinical sign of hemorrhage. This is not made too close to the fornix because the object is not so much the reduction of the uterus as the reduction of the menstrual surface. After this wedge-shaped piece is removed, both fornices should be thoroughly cauterized. If not, they will respond at the menstrual period, and, producing tension, give rise to pain. The cervical portion should also be touched for aseptic reasons. Of course, the part removed is carefully inspected for any appearance of malignancy. With a small, sturdy, curved needle, the two flaps are approximated, stanching hemorrhage. The peritoneal surface is further brought together by running catgut, clips are removed, uterus pushed back into place, and the anterior colpotomy wound sutured.

We feel it very essential for the reasons mentioned in the preliminary discussion that so long as it was meant that a woman should flow, a menstrual flux should be allowed to her. Then, again, there are many females who are subject to high tension and nephritic conditions, and the sudden stopping of the safety-valve of uterine discharge will accentuate the high tension and lead to disaster.

If the time ever comes when our operating rooms are dominated by female surgeons, I am sure that the average man operated upon by them who had his testicle circulation interfered with or his vesicula seminales removed would feel justified for anger and retribution. Likewise, we men who operate upon women should have the same consideration for their sentimental side. We should safeguard their structures. We should make every endeavor to reduce our surgery to a minimum, and above all, endeavor to avoid that which mutilates or takes from the woman what is her natural endowment and keeps her from being like other women.

DISCUSSION.

DR. ROBERT T. MORRIS.—Dr. Dickinson has brought up some fundamental points which are extremely important in the consideration of this subject. A woman is not a woman any more than a man is a man. Our surgery, conservative or otherwise, must be molded according to the individual woman, her age, her wishes with regard to children, her objection or otherwise to an incomplete operation, with the possibility of a recurrence of the condition. All these things belong to the individual woman.

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In considering the subject of decline which Dr. Dickinson brought up, and this is fundamental to the whole question, he did not make a clear distinction between nation and race. That must be kept clearly in mind. In this country there is a more rapid decline than in other countries, because in this nation we have not developed strong racial types. When Nature establishes cultural limitations in the development of a race, she strikes at the female sex first among plants and animals, and secondly we find more forms of arrested development among women than we do among men. Very few women are 100 per cent. feminine. We find the masculine type frequently with the pyramidal arrangement of pubic hair and the short clavicle. We find various changes which I need not enumerate here, but when the sexes approach each other in type, the anatomy and mentality associating themselves, the mentality has a tendency to represent the opposite sex in the course of decline. Decline does not mean that mentality may not be of the highest quality. Some of the most brilliant and valuable members of society among women are those who are masculine. They are not the ones to breed, they ought not to breed, they have no business to breed, and we have no business to help them to do so. That is not their function, but nevertheless they represent a mental state which on the whole is tremendously valuable for society.

There are two reasons for the rapid decline in this country. The Puritan and the Cavalier, who represented strong racial types, have now reached cultural limitations and are on the decline, and you will find, as you will find among all animals and plants during decline, a tendency of the sexes to approach each other in type. The absence of progeny is more noticeable, and the Puritan and Cavalier reach cultural limitations just as all animals and plants do. Another feature is that we are hybridizing too many sub-species of man. In this country, without emigration laws, we have allowed so many representatives of different sub-species to enter that *homo sapiens* is irregularly crossed. We have what Burbank has stated is bound to follow, a crossing of species that should not be crossed in breeding, consequently we have a rapid decline. Nature strikes at the sex organs of women first when decline is in progress. The sex functions are closely allied to mentality and will follow the anatomy because it is a physical matter. The mind is merely an expression of the physical force expressed in the individual.

DR. ALBERT GOLDSPOHN, Chicago.—The doctor's argument for conserving the ovary and its function, I sympathize with very heartily. There is one feature about this operation that some would object to for the same reason that they object to having the abdomen opened and the uterus cut into in order to find out what is the matter in it. Therefore, it is in order to consider what may be done without operating to help the cases that are not extremely bad.

The use of tincture of iodine applied to the endometrium, say about twice a month, in effective manner, will improve very many of these patients so that it is unnecessary to operate. Chloride of

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zinc will be needed once in a while, mostly during or near the menopause. It is destructive in its effect and may annihilate the endometrium, either stop menstruation or diminish it very materially, thus inflicting upon the younger woman a serious injury. But how shall we apply these remedies efficiently as office or home treatment? Certainly not by the ordinary applications now in the market. These are cervical applicators. If a liquid is to be applied efficiently to the endometrium, including the fundus, it is necessary to dilate the cervical canal with sounds the same as we would stretch a stricture of the urethra with a large sized sound, but one with a lesser curve. The woman will need to have a good dose of morphine, or the cervical canal must be anesthetized with carbolic acid or cocain. Ample dilatation to something like 25 or 30 French should be made first, under an aseptic technic; then the application must be made with some kind of syringe applicator, not by wires wrapped with cotton, and dipped into the liquid and run up, the liquid stripped off thus cauterizing the cervical canal excessively and doing nothing to the fundus. A syringe is absolutely necessary with a long and slender nozzle which is covered with absorbent cotton. The air must be forced out, and the cotton must be previously made wet with the fluid to be used; and then immediately after such an ample dilatation the nozzle is introduced without any difficulty. You inject from 2 to 4 c.c. and swab about well, and get out before the uterus has time to contract. Such intrauterine treatment frequently does much more good than curettement, if repeated several times at intervals of two to four weeks, and applied preferably soon after menstruation.

The diagrams of Dr. Dickinson represent to me more a resection of the fundus of the uterus rather than a hysterectomy, because not enough tissue is removed to warrant it being called a hysterectomy. However, the operation is a very sensible one, and in my experience the cases that will not submit to the kind of medical treatment outlined, will frequently require, in addition to resection of the fundus, also the removal of the tubes, leaving part of the endometrium and one or both ovaries to continue menstruation.

Dr. Hugo O. Pantzer, Indianapolis, Indiana.—It is a pleasure to notice from the title of this paper and the discussion that time-honored and ordinary practices again come under revision. Modern science has brought forward new aspects of this subject that must control our therapeutic action in these cases. The principle enunciated by Dr. Dickinson, that conservation shall govern our work, leads me to call attention here to the newer aspects of menstruation. We know that the ovaries are not solely the cause of menstruation; that we have the hormone not only of the ovary but the hormone of the endometrium, and, perhaps, as has been suggested, we may have the hormone of the breasts to consider. To ablate the entire endometrium would inflict a violence not only upon the sexual physiology, but upon the nutrition and chemism of the entire body. We must, therefore, hesitate to act in a radical way, using the cautery for the destruction of the endometrium, or often doing what is only a

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partial operation, removing a part of the endometrium as suggested by the essayist.

A new aspect to this question is based on the effects of toxemia upon all glandular structures, either from intestinal stasis, or from an infectious focus located in the tonsils, the posterior nares, the teeth, the gums, the jaws, or elsewhere. The immediate effect of such toxemias upon the glands of the body spells blight of glandular organs. According to my observation, many of these are cases of metrorrhagia and will return to the normal if we look after the toxemia that is present in many of them. If we can eliminate the toxemia or the foci of infection we can bring back the sexual organs to the point of carrying on their normal function.

Dr. Dickinson (closing).—I wonder if Dr. Morris heard the first part of my paper. I would like some time to write more of a sermon than a medical discussion on the constant struggle between the soul plasm and the germ plasm. I alluded in my paper to foreign countries, where the ethics are not the ethics of the United States. If we go from here to England, we take a step down, and if we go from here to Germany, we step farther down, and still farther down when we go to Italy, to the Balkans and some of the other countries where the germ plasm has ascendency. In this country Mother Grundy conventionalities lead to the development of brain. We have large minds, but among the lower class, the plebeians, the class of the other side, we see children. A good deal can be said, and very entertainingly, on this subject. We are developing in this country mules, physiologically speaking. Our old friend Emmet, whose book I like to read over and over, the same as I do my Flint, lays a great deal to climate. There may be something in it.

With reference to the remarks made by Dr. Goldspohn and Dr. Pantzer, I do not see how tincture of iodine can effect a cure, nor do I see how getting at the focus which caused this trouble can help these cases because they are terminal. They are fibrotic. The condition that has produced the trouble is away in the past.

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PHYSICAL CONDITIONS IN WOMEN WARRANTING STERILIZATION.

BY

ELLIS W. HEDGES, M. D.,

Plainfield, N. J.

THE sterilization of women is something which, like marriage, should not be entered upon "unadvisedly or lightly, but reverently, discreetly, advisably, solemnly and in the fear of God."

Rob a woman of her power to bear children and you take from her the chief crown of wifehood and, at the same time, you deprive the state of potential citizens and supporters.

In doing this operation you may pander to the selfish desires of some women to escape all the responsibilities and cares of motherhood, and, on the other hand, you may save useful lives which would be sacrificed in vain in the pangs of childbirth, and you may conserve mothers for the care and bringing up of the little ones they already have, by preventing future pregnancies that would be almost surely fatal.

The profession may always be trusted to stand loyally against this operation done for any unworthy purpose, but we believe there are times when it is our duty to do it to save valuable lives, even at the risk of subjecting ourselves to ignorant and unjust criticism. Sometimes it may be necessary to interrupt a pregnancy and to sterilize at the same time; again, after a perilous labor has been safely past, it may be required of us to prevent future conceptions. Very briefly we will discuss some of the conditions which, in our judgment, demand the operation of sterilization in women.

ECLAMPSIA IN TWO SUCCESSIVE LABORS.

If a mother has had eclampsia in two successive confinements she should have her tubes resected so that no further risk of impregnation can occur. I have done this once in my practice in a patient who showed no sign of nephritis between the first and second pregnancies. Each time she nearly lost her life though she is perfectly well now fifteen years after the operation. We are still in doubt as

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to the cause of eclampsia, though it seems to be due to a toxemia of pregnancy, and we know it is not always due to a nephritis. We know that it is only one-third as frequent in primiparæ as in multiparæ, though the claim that one attack gives immunity against subsequent seizures is not borne out by the facts. We know, too, how fatal it is to both mother and child, causing a mortality of 20 per cent. in the former and 50 per cent. in the latter. What right have we, if our patient has had two successive attacks, to risk the life of both parent and child in another pregnancy when we know we can save the mother by a simple operation?

DIABETES.

Another condition warranting the operation is diabetes. Not the transient glycosuria of pregnancy, but a real diabetic condition with grape sugar, acetone and diacetic acid in the urine, polyuria, thirst, sugar in the blood, and a general wasting of the tissues. If this condition is discovered in a nonpregnant married woman, unless the disease yields readily to treatment, or unless absolute sexual separation from the husband can be secured, I believe she should be sterilized. If the disease is discovered early in pregnancy, then we should do the combined operation of sterilization and abdominal hysterotomy, as recommended and practised by Dr. Palmer Findley.

There are a number of considerations which lead us to this conclusion. Labor has a bad effect upon the disease, worse even than surgical operations, and at least 30 per cent. of mothers die of coma before or during delivery, while 20 per cent. more die soon afterward of this disease or of tuberculosis. Nature often tries to save the mother by bringing about sterility in these cases by atrophy of ovaries and uterus; and in those who become pregnant, two-thirds of the babies are lost either by abortion, premature labor or early death. We can understand these facts if we remember that the liver is already overburdened in pregnancy, and that in diabetes the carbohydrate metabolism of the liver is at fault. If a woman has had diabetes and recovered, or perhaps has the disease in a latent form, pregnancy is almost sure to develop it.

Duncan and Schede state that if once a case has come through the ordeal, no further child-bearing should be allowed, and in this verdict I believe we all agree.

CHRONIC NEPHRITIS.

Chronic nephritis, either of the parenchymatous or interstitial type, is another condition warranting sterilization. De Lee says

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that women with chronic nephritis should not marry and, if married, should not conceive. It is hard enough, both on the patient and physician, to deal with the ordinary nephritis of pregnancy or with an attack of acute nephritis, but pregnancy has such an alarming and disastrous effect upon the chronic type that we should leave nothing undone to prevent a complicating conception.

We recognize the parenchymatous type by the hyaline and granular casts, white and red blood cells, diminished urea and small amount of urine, and the interstitial type by polyuria, low specific gravity, small amount of albumin, few hyaline casts and high blood pressure.

The outcome of such cases is that 30 per cent. of the mothers die and 70 per cent. of the children are lost.

If the mother survives, her nephritis is invariably worse than before and more securely fastened upon the system, entailing invalidism and a shortened life.

As opposed to that picture, sterilization saves her for years for what may be, at least, a comfortable existence, and if we find out our patient's condition only after pregnancy has begun, then we should end it by hysterotomy and resection of the tubes. This can be done under gas-oxygen anesthesia without danger and without aggravating the nephritis, and it seems to us the argument is overwhelmingly in favor of interference.

PULMONARY TUBERCULOSIS.

If a mother has active pulmonary tuberculosis, we should sterilize. If latent, this disease is lighted up by a pregnancy and may be brought to a probably fatal ending shortly after confinement. We know how long and how comfortably a tuberculous patient may live under modern treatment, and if we find in such a one a uterus with an embryo in it in the early months of pregnancy, why should we doom the mother to certain death a few months hence by letting her alone when we can, in all probability, save her life for years to come by prompt interference?

Here, too, we should empty the uterus and tie the tubes. Some may say this woman may recover entirely in time, and when you have sterilized her she can no longer bear children. Our answer is, that even if cured, the disease is latent and likely to be excited by another pregnancy, but even if we grant the contention, by the method of implanting the ends of the tubes in a slit in the broad ligaments they can later be taken out, opened and anastomosed, and the sterility is undone.

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Of course tuberculous persons should not marry and, of course, they should not conceive, but until the strong arm of the law steps in such things will happen, and it is our privilege to, at least, mitigate the miseries entailed by such criminal folly. Our experience does not coincide with those who hold that tuberculous women seldom conceive, and we believe that while working for the enactment of proper laws on the subject, we should meantime do our best to save these unfortunate people. Very often, of course, tuberculosis develops only after marriage, and then no law would avail.

CARDIAC DECOMPENSATION.

Many cases of heart disease go through successful labors, though the effect of pregnancy and parturition by throwing an extra strain on the organ is to increase existing trouble. But when there is decompensation due either to myocarditis or to valvular disease, and it matters not whether this latter is mitral, aortic or the two combined, then child-bearing is a more hazardous undertaking.

Statistics place the maternal mortality anywhere from 6 to 85 per cent., but all writers agree to the grave dangers confronting the mother. Abortion, premature labor and stillbirth claim the vast majority of the fetuses.

If we are brought face to face with a case which presents edema, ascites, dyspnea, attacks of suffocation, palpitation, cough, insomnia, what are we to do? We believe the answer is plain, and that is, to empty the uterus through an abdominal incision and sterilize if we see the case early, and if the child is near viability tide the mother along with rest and heart tonics till the child can be taken, and then, if the mother survives see that the tubes are resected before another pregnancy can occur.

Pregnancies, such as these, which are so apt to result in the death of the fetus, and in the death or impairment of the mother, are not worth while and should not be allowed to occur.

As physicians, we cannot enforce this treatment, we can only advise, but unless we state to the patients the probabilities in all candor, we are not doing our full duty.

Pregnancy, complicated by any of these diseases which we have mentioned, is a perilous thing for both mother and child. The chances are more than even that one or the other will perish and very often both lives are lost.

Moreover, the children of eclamptics, of diabetics, of chronic nephritics, of the tuberculous and of decompensated heart cases, even if born alive, often enter life with such a physical handicap that no

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well-wisher of the race could welcome them. If we see a married woman suffering from any of these conditions before conception, a plain talk with both husband and wife, backed by a consultation which should always be held, would often persuade the couple to permit this harmless and effective procedure, and thus many useful lives would be saved. If seen in early or mid-pregnancy, a hysterotomy and sterilization would still hold out hope for the mother. If seen shortly before viability, an attempt should be made to tide the mother over the few intervening days, but as soon as viability is assured, bring on labor at once and sterilize later.

There are other conditions, too, for which sterilization should be done but here we will find opinions more divided.

PYOSALPINX.

The much mooted question whether or not to sterilize in these cases is still about the same as it was when we were students of medicine. If the woman is well to do, and can afford to be an invalid, let her alone with a nurse and a fountain syringe and an easy chair. Sometimes the tubes reopen and a pregnancy may occur. But if she has to earn her living, take out her tubes and give her health and sterility, after a fair trial of palliative measures.

INSANITY.

Suppose a mother after marriage develops some mild but fixed form of insanity. She is not violent and the family does not want her sent to an asylum. In view of the pronounced hereditary taint in such cases, she should not bear children, but the only sure way we know of to prevent it is to sterilize. Up to the present time, we know of no way of improving the condition of idiots and feeble-minded women. Because of their mental state and lack of will power, they are peculiarly liable to be sinned against, and their children are only a burden to the state, augmenting the already huge numbers of the vicious and dependents. Unless confined in some institution, we believe that insane and feeble-minded women within the child-bearing age, after examination by a state appointed commission of experienced neurologists, if pronounced by them incurable, should be sterilized.

EPILEPSY.

The same is true of epilepsy. None of the last four types should be allowed to marry, and yet not long ago in our own state at Trenton a prospective bride fell in a true epileptic fit at the altar. Very often,

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epilepsy develops after marriage, and in view of the almost certain inheritance of this dread disease we believe that every wife, thus afflicted, unless removed from the home, should be sterilized, or at least until such time as our honored Dr. Reed can run the epileptic bacillus a little closer into its lair.

As physicians, we have recognized the danger and the menace of child-bearing in the various types of cases which have been briefly referred to, and we have attempted to combat them, but a more vigorous and determined stand for sterilization of women, when clearly indicated, would annually save thousands of lives which now are needlessly sacrificed.

DISCUSSION.

DR. EDWARD J. ILL, Newark, N. J.—Dr. Hedges has touched upon a very, very serious question which is going to be abused just as much as the removal of the ovaries or the removal of the uterus was. We have had an excellent exposition this morning telling us why we must conserve these organs. The sterilization of women is a perfectly legitimate and proper procedure. I think the first paragraph of the doctor's paper is along the right line; in other words, we must be exceedingly careful which cases we subject to this operation. I think we all agree that the state has a perfect right to sterilize epileptics, the chronic criminals, the insane, and the idiots—whether males or females, does not make any difference. We can also say that cases of repeated Cesarean sections should be sterilized if the patient's best interests are thus served. I have performed Cesarean section three times in succession within a couple of years. I thought that was the limit, and I sterilized this woman; I do not remember whether she was sterilized with or without her consent.

As to chronic nephritis, I am not quite sure we have a right to sterilize women suffering from that condition. Usually a patient who is pregnant and has a chronic nephritis, can be carried along under proper diet and under proper care and no mischief will result. That is an entirely different thing from the woman who comes to this hotel, for instance, on a Sunday evening, takes a big dinner, and you see her the next afternoon with the urine loaded with albumen, or hardly any urine in her bladder. A case with a chronic nephritis of a mild, not the severe, type, where the woman cannot lie down, where she has anasarca, is a different thing. I am referring now to the light type of case and here we have no reason to interfere with her normal functions.

Some thirty years ago, when everybody was removing pus tubes and ovaries, I asked an old and experienced practitioner in Newark what he thought became of these cases. I had wondered what had become of these women before. He related a few cases to me in which he had evidences of infection on both sides. He mentioned

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one case where the woman had two or three children following the disease. I immediately stopped removing pus tubes, except in that one particular form where there were recurrences. I have seen a number of children born, after women had been cured from a pyosalpinx, by other than surgical means; so I am very strongly opposed to sterilizing a woman for the reason that she has pus tubes. One naturally asks what is the frequency of gonorrheal diseases. Take our own city of Newark and my own practice. I do not know that I see two prostitutes in my office in a year; but I do know from an actual count that 22 per cent. of all women that come into my office have either gonorrhea or residual symptoms. These women are not all sterile. Twenty per cent. of all women are not sterile, so I am opposed to that operation.

There is one condition the doctor has not spoken of that absolutely demands sterilization; I refer to the Watkins operation in young women. Such patients cannot give birth to children, they cannot even go along with a pregnancy after the third or fourth month.

I am glad Dr. Hedges has brought this matter before us because it needs a thorough discussion. In these days of commercial surgery, it is well worth while to establish a limit of what we are permitted to do in this particular field.

Dr. Herman E. Hayd, Buffalo, N. Y.—This has been an exceedingly interesting paper to me and more interesting on account of the splendid discussion of Dr. Ill. There is no question but what Dr. Hedges' invocation was most beautiful, that we should seriously, reverently, and with the fear of God operate upon women; but, it seems to me, he suggests an omniscience on the part of the surgeon that does not exist in this mundane sphere. For him to say that such and such a case of diabetes, and that such and such a case of chronic nephritis, is going to die is absurd. It is unscientific. It is too sweeping, and, moreover, that we possess in the way of surgical qualification such an infinity that we are going to be able to carry these people through these surgical undertakings without a high mortality, is equally absurd in my judgment and equally extravagant. I believe that sterilization might be justifiable in these cases of chronic nephritis, tuberculosis and diabetes, provided these women are about to die of some other unrelieved pathological condition, such as perforating ulcer of the stomach, or a duodenal ulcer, or an acute gall-bladder trouble, or an acute appendicitis. By all means sterilize such women, if it is convenient and does not increase greatly the mortality, but to deliberately operate upon them for such conditions as Dr. Hedges refers to I feel is a position that the members of this Association should not and ought not possibly endorse. Nor can we assume that every woman who has a pus tube is going to be sterile, because I have confined too many women whose husbands I have treated for active gonorrhea, and many women I have also treated for gonorrhea who have subsequently become pregnant carried their babies until the period of their confinement, and have remained well afterward. I will admit that all of them do not, but a great many of them do.

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So far as the State is concerned, I agree with the doctor that we should operate on criminals and limit the possibility of marriage in these individuals so as to stop the procreation of criminals and the derelicts of society. That is an entirely different proposition. From a scientific point of view, as I look at this paper, it seems to me the doctor's conclusions are most sweeping and not at all warranted.

DR. GORDON K. DICKINSON, Jersey City, N. J.—I have been doing surgery and have been connected with hospitals for thirty-seven years. During that time I have been associated with some of the greatest men in surgery. I have seen some of the work myself. I never could get the courage to sterilize a woman, except when there is a narrow pelvis, and there is no hope of getting the baby out except through repeated Cesarean section. In the case of a woman with a good physique, where the surgeons are clever, and the woman goes to a hospital, repeated Cesarean section may be all right. The Lord has not given me the brains to say it is not, but as for other sterilizations, I think such surgery is not called for. I think if we feel the necessity of saving a woman from pregnancy, if, after careful study of the woman as well as the condition, we feel it is wise to sterilize her, before doing so we should advise other measures which are well known and which are not surgical.

DR. CHARLES L. BONIFIELD, Cincinnati, Ohio.—I have enjoyed the paper of Dr. Hedges and the discussion very much; but with all of his conclusions I cannot agree. I am not bound by the dogma or the rules of any church, and when I find that a patient in my judgment will die unless the uterus is emptied, I do not hesitate to empty it. But I do hesitate to arrogate to myself judgment as to whether future pregnancy shall take place. There are certain conditions which have been mentioned, and I will not dwell upon them, which may justify that procedure, but, it seems to me, that the doctor's enthusiasm has carried him beyond the sphere of the private physician. If the State in its wisdom makes laws to prohibit the marriage of defectives, or makes laws that will necessitate the sterilization of this class of people, in obeying those laws we will be considered good citizens. To make a law for ourselves as broad as the doctor has laid it down, I am free to confess my conscience will not permit. I think that if the doctor will look at it in this way, that these married women will probably only become pregnant for one man, why not sterilize the man instead of the woman, as it is just as simple an operation, and less dangerous, and I feel sure that it would not be so often done. I believe in treating our wives and our mothers just as we would be treated ourselves, and I do not believe it is within the province of the doctor in some of these conditions to place a woman so that she cannot become pregnant. If she should not, it is the physician's place to tell her so and to tell her husband, and it is their business to say whether or not she shall become pregnant, and not ours. Human beings must look out for their own welfare and comfort to a certain extent, and it is not the province of the physician to make things too easy for them.

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DR. ROBERT T. MORRIS, New York City.—Dr. Hedges' paper is all right, but it requires elaboration. Diabetes is not a disease, it is a symptom, like a cough. I would not think of sterilizing a woman for diabetes until I had made an attempt to trace and find its cause. If an individual in one case squeezes the islands of Langerhans because of a chronic pancreatitis due to colonic infection, I would not sterilize the woman for that kind of diabetes. We have other means. Supposing enteric disturbance in a woman is due to upset innervation of the sympathetics of the enteron caused by eye muscle imbalance, you would put on glasses before you took her ovaries out. As I have said, the paper is all right, but it needs elaboration.

In connection with tuberculosis, we know that more than 50 per cent. of all people in the civilized world have evidences of tuberculosis of one sort or another at some stage of their lives. This is a matter of postmortem records. We cannot gainsay it, so that we have got to specify in Dr. Hedges' paper what kind of tuberculosis we have to deal with. In tuberculosis of the lungs that is advancing and uncontrolled, I might say yes, sterilize the woman. In some cases of pyosalpinx we have plastic operations to fall back upon; we have a number of conservative things which may be done in some cases of pyosalpinx. We must all take out pus tubes that are causing peritonitis, but confine the sterilization to a relative sterilization, depending upon the removal of the tubes alone. Even my statement in this connection is too general and requires elaborate dissertation.

DR. THOMAS B. NOBLE, Indianapolis, Indiana.—I would like to put a general question, not directing it to the essayist or to any particular discussor. I would like to ask what we are to do with a young woman who, in the toxemia of pregnancy, develops hyperemesis and exhaustion follows until dissolution is imminent, and counsel advises the termination of pregnancy? When that is repeated a second time, and again a third time, what shall we do relative to the matter of sterilization with such an individual?

DR. WILLIAM E. DARNALL, Atlantic City, N. J.— Isympathize with Dr. Hedges and the knocks he has received. I do not believe he meant to say that every case in all of these various classes he has enumerated should be sterilized, but I do believe that there are cases in each class that have to be sterilized. In other words, as Dr. Morris has said, it all depends on elaborating the case. After a very thorough study of the case and an elaboration of the whole makeup of the woman's constitution and her tendencies, perhaps there are cases in each class that need to be sterilized.

It is hard to read a paper of this sort without having it misunderstood. The moment you advise sterilization for diabetes or for Bright's disease or nephritis, one immediately thinks that it applies to every case rather than to the individual case. After all, it gets down to the same thing, that every one of our surgical problems means the consideration of the individual.

DR. HEDGES (closing.)—I seemed to have stirred up trouble and I

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wish I had time to cover that part of the paper which I did not elaborate sufficiently. But to begin with the adverse criticisms that have been generously given here, I would like to take issue with Dr. Ill, and I feel that he has recommended sterilizing in some women where I would not. He takes the position that where a Cesarean section has been done on a women two or three times for the delivery of her baby, she should be sterilized. I have read repeated accounts of five or six pregnancies where the women were all delivered by Cesarean section, where there was no rupture of the uterus, and where the operation went through safely. I purposely left that out of my paper. I do not think that such women ought to be sterilized. Dr. Ill goes farther than I do in claiming sterilization in such cases.

Every one seems to have attacked the chronic nephritis argument. I did elaborate sufficiently there to say that when a woman presented anasarca, rapid heart and dyspnea, with extreme symptoms of poisoning from chronic nephritis, she should be sterilized. I purposely left out the milder cases of chronic nephritis which might go through safely. When the text-books tell us that 30 per cent. or more of mothers that become pregnant in conditions of chronic nephritis and die when otherwise they would not die, we are perfectly warranted in going on with sterilization.

As to sterilization in case of pus tubes, I perhaps should have made a little longer argument in relation to that. I passed that phase of the paper over rather casually. My own practice is that if a woman suffers continuously and repeatedly after a faithful trial of douches and other palliative measures, I take them out, otherwise I let them alone.

Dr. Bonifield spoke of consultation in these cases, and I did take pains to say that a consultation should he held, and that an operation should never be done without being sanctioned by other men of repute.

As to tuberculosis, I mentioned in the paper cases of pulmonary tuberculosis particularly. I agree with Dr. Morris that every one of us has tuberculosis somewhere or other at some time, but there again the figures are on my side. If a woman with a cough, fever, and an active process in the lung becomes pregnant, she is going to die either at the time of delivery or shortly after, and if we can get hold of her in the second or third month and get rid of the fetus, she has a mighty good chance to live. I do not see why we should doom her to certain death by letting her alone, and I stand by my guns on that. I believe such a woman ought to be sterilized.

DR. HAYD.—Why not abort her? It is much easier. She may die before she gets pregnant again?

DR. HEDGES.—That is another thing, but I was discussing the question of sterilization, and that is better yet because I do not think she ought to become pregnant at a future time, if it is possible to prevent it.

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A CINEMETOGRAPH DEMONSTRATION OF THE OPERATION FOR THE CURE OF COMPLETE PERINEAL LACERATION.

BY

EDWARD J. ILL,

Newark, N. J.

This demonstration was given to supplement a paper read before this Association seven years previously. About eighty cases have been done by this method without a failure and the patient, on whom the operation shown in the film was done, was presented for inspection of the ultimate result at St. Michael's Hospital, Newark.

DISCUSSION.

DR. THOMAS B. NOBLE, Indianapolis, Indiana.—I have been particularly interested in the demonstration of this operation for complete perineal tear. I am interested in it because I feel flattered; I have been doing the same radical operation since the days of our lamented Dr. Dunning, who witnessed our first operations along this line. I am flattered to know that one of Dr. Ill's capacity and skill is doing that same thing.

Our plan is a little different in that we trim away the cicatricial line or cord made by the granulating surface at the junction of the vaginal and rectal mucosa. This junction granulating together will form a contracting band which I feel it is better to remove. It has been our plan to introduce sutures of buried chromic catgut, No. 1, when it comes to forming the perineal body, from within outward. This necessitates the catgut being threaded at either end on two needles, or taking the needle off when it has been brought from within outward, and rethreading on the other end to reintroduce it. The introduction of the deep suture on the left side is best done with the right hand from within outward; the end then passing through is rethreaded. On the right side of the patient it is best introduced with the left hand from within outward. This gives a much better equalization of the natural bite, and a more symmetrical approximation of the surfaces that are to be brought together. Our first suture introduced to form the anterior anal wall is double chromic catgut, and after beginning at the apex of the wound it is brought down, never encroaching upon the rectal mucosa, but turning the rectal mucosa toward the lumen of the gut by a running suture. This suture is made to include the ends of the external sphincter and is left until after the perineal

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body is formed by the previously buried chromic catgut sutures. This suture is then utilized to approximate the skin by a running subcuticular stitch, so that when the operation is completed there is no suture penetrating the skin, which has two virtues. I believe it eliminates the feature of infection, but more than anything else, it is a matter of decided comfort to the patient not to have the perineal skin punctured by retention sutures.

DR. CHARLES L. BONIFIELD, Cincinnati, Ohio.—I am not at all surprised to learn that Dr. Ill has had a large series of cases that have been successful because his operation is based on proper principles. The denudation, as we all know, is the denudation of Tait, and I simply wish to refer to two points in which the operation that I have performed for years differs from his. In the first place, instead of sewing the bowel, I make the denudation exactly as he does, using the knife entirely. Then, instead of sewing this together as he does, I dissect the rectum loose to a higher level, and leave the forceps on until the completion of the operation. This avoids the necessity of sewing the rectum. I close the sphincter ani with a figure of eight suture of chromic gut build up the perineum with a tier suture of plain gut, as recommended by Martin, of Berlin, and close the mucous membrane and skin again with fine chromic gut. I do not use any of the sutures the doctor describes; when he uses silver wire to include all tissues, I have three layers of ordinary catgut. It is simply a matter of bringing a large quantity of tissue in a single row of sutures, or carefully approximating the edges in that way, but the particular point is pulling the rectum down so that there is no occasion for sewing it and there is no danger of infection from it.

DR. WILLIAM H. HUMISTON, Cleveland, Ohio.—It is a great comfort for a woman to have a laceration of this kind repaired so that the sphincter ani will functionate and prevent the discomfort which she may have labored under for months and even years. I formerly performed these operations with sutures that required subsequent removal, namely silkworm-gut and silver wire, but I found they were a source of irritation. The principle of Dr. Ill's operation is, of course, the correct one, but I think the same result can be reached in another way, which to my mind is not attended with the risks that follow the use of retained sutures. Nurses will pull upon the tube in getting around it to dress it and a superficial irritation is produced, followed perhaps by the discharge of pus and infection. With a double tenaculum I take up tne crest of the rectocele and I make an incision in the median line. I then denude as high up as I care to and down to the edges of the sphincter ani muscle. I then split the fascia in the median line which exposes the fibers of the levator ani muscle which are retracted. This muscle is funnel-shaped and comes down around the vagina and rectum. I find the retracted fibers of the sphincter ani muscle and unite them with an interrupted suture of catgut, bringing them to the median line and down to the rectum. Then I unite the rectal surface, being careful not to go through the mucous membrane,

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but go barely to the edge of it, with interrupted sutures. I put two sutures of No. 2 chromic catgut through the sphincter ani and tie them. With a continuous suture the fascia over the muscles is brought together, then with another suture the mucous surfaces down and through the skin to where the sphincter has been joined. If you do not achieve success in these cases within the first four or five days, you will not obtain it at all, and the catgut will last ten or twenty days, giving you a perfect result, provided you have done this aseptically. The idea Dr. Ill brought out, not to use sponges, but a flow of water over the surfaces is a great comfort, keeping the field perfectly clear and aseptic. In this way you avoid pushing the tissues about with gauze sponges, perhaps getting infection from the rectal mucous surfaces into the field of operation.

Dr. Albert Goldspohn, Chicago.—The operation so beautifully demonstrated here is practically and entirely the same thing I have been doing at least for ten years, except that I use silkworm gut instead of wire. The operation, so far as demonstrated, achieves what was achieved by the Tait and by the Emmet operations. It will give good results as far as injury to the sphincter is concerned, but the Tait and Emmet operations have never restored the pelvic floor properly. That requires deeper work within the pelvis. Therefore, my technic will vary from that demonstrated here in this respect: that, after the rectum has been closed, by the first row or double row of continued submucous catgut sutures, with care to avoid infection from the rectal mucous membrane, and before the other steps of this demonstrated operation are done, I raise the mucous membrane deeper within the vagina, from the lateral sulci, and get at the levator ani fasciæ actually, as the Emmet, Hegar, and Tait operations have never done. I hook into these fasciæ on both sides with a needle, and by the resistance that they offer to the pull, I know that I have caught them properly. To get these two firm structures in apposition, it is necessary to use buried suture material and in a transverse direction solely, not coming out to the skin by a circuitous route or purse-string suture; but by deeply buried catgut, hold the opposing fascia planes together near the median line without any other tissues intervening. After that is done, complete the outer portion of the perineum in the manner demonstrated by the essayist.

Dr. Joseph H. Branham, Baltimore.—Will you kindly tell us about the subsequent treatment.

Dr. Ill (closing).—Careful nursing is the important part of this operation, and especially is it important that the first movements should be carefully looked after. The patient is put on the left side, the perineum is pushed down with the left hand of the nurse, and with the right hand she opens the anus and passes a basin underneath. We inject a few ounces of oil to ease the movement. After that the patient is put on the bedpan or commode as any other patient. We insist upon clean gauze upon each side where the sutures are inserted and changed as often as they become soiled.

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DR. HAYD.—Do you catheterize these patients?

DR. ILL.—We let them pass water if they can, but throw a stream of sterile water over the parts afterward. The oldest case had a tear for twenty-nine years. She had had it so long that she never knew it was wrong to have such a state of affairs until she had a mishap one day. The next oldest was twenty years. These patients have all gotten well. There were about eighty of them in all. Perhaps some of the gentlemen in this neighborhood will tell us of some that did not get well, but in looking them up we find none that have not recovered entirely. I would not put a buried suture so close to an organ that is so full of infectious material as is the rectum. If you get infection of the mucous membrane and you do not have a culture medium in the wound, you will not have difficulty. If you have a culture medium, in the shape of a piece of catgut, you will have failures.

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PROLAPSE OF THE UTERUS.

BY

C..L. BONIFIELD, M. D.,

Cincinnati, Ohio.

THE cause of prolapse of the uterus is a weakening of its supports, or an increase in the weight of the burden they have to bear. In many cases both of these factors play an important rôle.

The uterus is held in its normal position by its ligaments, by intra-abdominal pressure and by the relation its axis bears to the axis of the vagina. The supports of the uterus may be weakened by intra-abdominal pressure acting on the uterus in an abnormal way; by a change in the axis of the vagina due to a laceration of the perineum which alters the axis of the vagina, or by the lack of tone of its ligaments. The weight of the burden the supports must maintain is increased by subinvolution, usually due to infection, by laceration of the fascia under the posterior vaginal wall, which not only permits the posterior vaginal wall to depend on the uterus for supports, but also allows the rectum to bulge forward into the vagina and destroys the action of the levator ani muscle, leaving nothing to oppose an action of the anal sphincter.

In the act of defecation, therefore, the supports of the uterus are called upon to bear the brunt of the expulsive efforts exerted on the fecal mass, and the latter is forced through the sphincter, instead of the sphincter being opened for its passage.

In a like manner, injury to the fascia of the anterior vaginal wall permits of the descent of the bladder and the transference of more or less of its weight on the supports of the uterus. Efforts at micturition add to the stress placed upon them, because a portion of the bladder is lower than the urethra.

As soon as the uterus has been pulled from its normal attitude of slight anteflexion, intraabdominal pressure exerts its force on the fundus rather than the posterior aspect of the uterus, and is, therefore, no longer a support, but a further strain on the already overtaxed ligaments. It is as though a rebellion had broken out in the army of defense and some of the troops had gone over to the enemy.

It is true, that we occasionally have a prolapse in the unmarried,

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but it is rare, and no doubt in all such cases the supports of the uterus are congenitally defective. The vast majority of cases occur, as I have described, in women who have borne children. Many times the ligaments of the uterus are able to bear their burden for a number of years after the injuries of childbirth, but as the menopause approaches and the attendant weakening of the ligaments ensues, the prolapse slowly but inevitably occurs.

Recognizing how and why prolapse has occurred, the rational treatment is to decrease the weight of the uterus, replace it in its normal location and attitude, and relieve it of all its abnormal burdens.

The weight of the uterus may be decreased by rest in bed, curettage, and amputation of the cervix, which is always hypertrophied in these cases. The uterus may be held in its normal place and attitude by a Gilliam operation, or, if the patient be passed the child-bearing period, by a ventral suspension, which is a little more easily and quickly done, and the uterus may be relieved of other burdens by the proper operations on the posterior vaginal wall and perineum and the anterior vaginal wall.

All of this was recognized by the earlier gynecologists, and put into practice with a skill and thoroughness that is rather unusual at the present day. Since gynecology has become less of a well-defined specialty, there has been a tendency to depart from these rational procedures and follow the spirit of the biblical injunction "If thy right hand offend thee, cut it off;" or to put the uterus in some absolutely abnormal position and attitude.

There are probably several causes for this change in methods. The most common, I think, is that many men are doing gynecological operations who are not trained gynecologists, and cannot properly restore a badly damaged perineum, or cure a bad cystocele. Another is, a foolish desire on the part of many operators, particularly of the younger generation, to add to the number of major operations they perform, and, I am sorry to add, that the third one is, that sometimes a larger fee can be obtained for doing a hysterectomy than for doing plastic work, and finally, some surgeons do not like to take the time necessary to perform the surgical steps that result in an anatomical and physiological cure of these cases.

They argue that the patient cannot well endure the long anesthesia that is required. In answer to this plea, I submit that many surgeons are not only slow, but deliberately slow and unnecessarily slow. If ether be used and given in such a way that there is more or less breathing of carbonic acid gas, and the temperature of the pa-

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tient's body is maintained by artificial heat, and the operator will attend strictly to his work, and work with even a moderate rapidity, there are few patients indeed that will not stand very well these operations at one sitting. But if the operator is determined to be very deliberate about his work, there is no reason why the operation should not be divided into two steps. I maintain that it is better to restore a woman to her normal condition by an operation that requires time and care for its execution, than to mutilate her with one that seems more brilliant and can be done in less time.

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OPERATIVE TREATMENT OF PROCIDENTIA.

BY

ARTHUR T. JONES, M. D., F. A. C. S.,

Providence, Rhode Island.

In taking up the consideration of operative treatment of procidentia, we shall deal only with those cases in which the uterus is either partially or wholly protruding from the vulva, confining ourselves strictly to the condition of procidentia, as the term is usually accepted.

This condition is found so frequently and its symptoms are so distressing to the patient, that it seems of sufficient importance to consider how, by operative procedures, we may best remedy the condition and relieve symptoms.

The mechanical support by ring or pessary is unsatisfactory in these cases, as it is necessary to have a fair perineal support to make the pessary effectual.

In most of the older patients the perineal floor is gone, which makes the utilizing of a hard rubber pessary practically out of the question. The large soft rubber pessary or large rubber ring cannot be recommended on account of its being impossible to keep the vagina clean in its presence and of the great tendency for it to erode the vaginal walls. As we must depend upon the distention of the walls by the pessary for support, we are increasing the condition which already exists; that is, we are overdistending those tissues which are already relaxed and redundant.

In young women with prolapse and with sufficient perineal body to retain the hard rubber pessary, we may feel justified in using it as a means of temporary relief, especially in the presence of an already pregnant uterus.

So much for the use of the pessary, which brings us to operative methods as the only satisfactory means of treating these cases.

Numerous operations have been devised from time to time, from hysterectomy in the earlier days, which was considered the only method of treatment, up to the more recent operations of interposition of the fundus uteri with the accompanying general repair of cystocele and perineum.

In the selection of an operation the age of the patient is one of the

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first things to be taken into consideration. If the woman is still in the child-bearing period and capable of becoming pregnant, it may be wise and necessary to choose a different operation from that which we might choose in a woman who has passed the menopause; in fact, it is very important that no operation, which does not permit of pregnancy and the patient carrying her child to term, should be performed upon any woman still within the child-bearing age.

The degree of the procidentia, the presence of tumors or disease of the appendages—the presence of erosions and lacerations of the cervix and vaginal mucous membrane, may also have some weight in determining the type of operation. Hysterectomy should not be performed on a woman still in the child-bearing period any more than one of those operations which does not permit of her carrying the child to term.

In cases of tumor of the fundus or body of the uterus, as multiple fibroids, or where disease of the appendages makes their removal necessary, it may be wise to do a supravaginal hysterectomy, after which the cervical stump is suspended with the round and broad ligaments. In connection with vaginal and perineal work, this will give the proper support and prevent prolapse of the cervix and vaginal walls.

Hysterectomy is seldom necessary or justifiable in women past the menopause, and where we have a small uterus without complications, of tumors or disease of the appendages, when such excellent results are to be had with the interposition operation. No operation for procidentia is satisfactory which does not include the proper vaginal and perineal work, as support is needed below in conjunction with any suspension or interposition operation.

In women before the menopause a moderately high amputation of the cervix, thorough curettage, repair of cystocele, and a proper perineorrhaphy should be done; then some suspension operation from above should complete the technic.

In my experience the Alexander operation for this is most satisfactory. This operation has the advantage of utilizing the largest and strongest portion of the round ligaments and permits of the increase of the size of the uterus in pregnancy without danger of miscarriage or of complications at term. Again, the ligaments regain their tone after labor, and we find the uterus in good anterior position with the round ligaments sufficiently firm and taut.

This we have observed in several of our cases following two and (in a few cases) more than two pregnancies.

The time consumed in an Alexander operation is, as a rule, less

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than for opening the abdomen, and there is less danger and less shock than when the peritoneal cavity is opened.

I prefer the Alexander operation in these cases to the Gilliam operation, as the areas in which the ligaments are anchored are greater and give better attachment than we get in the Gilliam. The internal Alexander, so-called, or Baldy's operation sacrifices the stronger portion of the ligaments and utilizes only the weaker ends, and has not been found as satisfactory in our hands.

The suspension of the uterus to the peritoneum is in most cases useless and ineffectual. In some cases it may amount to a fixation, and this condition we should avoid by all means. We have seen several cases of ventral fixation which were done in the earlier days and in which pregnancy followed with disastrous results.

The Coffey operation and the ordinary plication of the round ligaments again utilizes the weaker portion of the ligaments for support and sacrifices the stronger. The Alexander operation, I feel, is also a very good operation in many cases beyond the menopause, but not in those cases of old age when the tissues have become senile and atrophic.

There has been some objection to the Alexander operation on the grounds that the round ligaments were not intended by nature as supporting ligaments. This argument does not hold good in the face of practical experience for, if they can be made to do the work satisfactorily, surely we are justified in using them.

As a matter of fact, not a great amount of weight is put upon the ligaments, they still perform the function of guy ropes to steady the uterus and hold the fundus forward, so that the intraabdominal pressure is exerted upon the posterior wall of the uterus as it is under normal conditions.

We have had occasion to see a few cases laparotomized after a previous Alexander, and it has been interesting to note the apparently normal position of the uterus in these cases.

In the majority of cases beyond the menopause, especially the older patients, the interposition operation, in our hands, has been very satisfactory. It does not consume great time, there is very little shock, and after-results from the patient's standpoint, as well as the operator's, are very satisfactory.

The uterus should be curetted unless we have a small senile uterus without discharge, in which case I have omitted the curettage. The cervix should be amputated, the bladder separated from the anterior uterine wall and from the vaginal walls, the anterior culdesac opened, and the bladder pushed high up over the fundus of the uterus.

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The sutures are then placed, beginning posteriorly in the middle line and going around either side fitting the vaginal wall well onto the new cervix, leaving the large redundancy on either side to be cut away after putting in stay sutures, which fix the body of the uterus to the anterior vaginal wall. A careful perineal operation, bringing the levatores well together and closing the introitus to virgin size completes the operation.

The effectual cure of the cystocele and rectocele without any further evidence of prolapsing is very gratifying.

In doing the interposition operation, I have tried to follow the technic of Dr. Bandler as near as possible.

The Murphy operation, transplanting the body of the uterus between the layers of the abdominal wall after splitting the uterus and removing the endometrium, has not appealed to me, and we have not utilized it in our work. If some of the members here have had experience with it, I would like to know their end results, and if the operation has been satisfactory in their hands.

In the summing up this brief paper, I would emphasize the following points:

Consider the age of your patient first in your selection of an operation. Do not perform a hysterectomy in young women unless there is some indication aside from the condition of procidentia. Do a preliminary curettage; shorten the cervix; attend to cystocele and provide good perineal support in conjunction with any of the operations for procidentia. In women who are still within the childbearing period, this general repair in connection with the Alexander operation gives very satisfactory results. In the presence of diseased appendages, and when intraabdominal work is indicated, we should select a different type of operation and each operator will undoubtedly be governed by the conditions found in that particular case, and do that particular operation which has been most satisfactory in his hands. For the patient past the menopause, unless we have definite indications for opening the abdomen, the interposition operation has given more satisfaction than any other method of treating this distressing condition.

DISCUSSION OF THE PAPERS OF DRS. BONIFIELD AND JONES.

DR. SAMUEL W. BANDLER, New York City.—There are very few operative procedures in gynecology where, in my opinion, after years of experience, one needs to individualize as little, outside of the general principles which have been enunciated by the gentlemen who have read these papers. If a patient has a prolapse of the uterus and has to bear any more children, the vaginal interposition operation,

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whether you call itthe Schauta, Wertheim or Dührssen, is absolutely out of question. If Nature had intended a woman not to bear children, she would never have put the bladder in front of the uterus. She would certainly have put the bladder on the posterior wall of the uterus, but just because the uterus grows up above the umbilicus and toward the ensiform, the bladder must stay on the anterior wall, and you must keep it there in a prolapsus with a patient who may become pregnant. Therefore, we fasten the uterus in the elevated position. Dr. Bonifield spoke of the Gilliam operation, while Dr. Jones referred to the Alexander. I am very glad to hear Dr. Jones speak of the Alexander operation and to hear of its good results, because I have not used it for these prolapse cases, and on simply mechanical grounds it does not appeal to me, but if it worked as well as Dr. Jones said it does, it is a simple procedure. In fact, from the pure enjoyment of doing the operation, I would rather do an Alexander than any other gynecological operation. But I fasten the uterus higher up than that when there is a prolapse. The uterus is large and heavy, and if you look into the pelvis when you do a laparotomy and see where the round ligaments are, and then look at the uterus after having done an Alexander operation, you will find it is away down in the pelvis. It is not in the position I like to put it in a prolapse. I fasten the anterior wall of the uterus up close to the abdominal wall either by a Gilliam operation or by ventrosuspension, and even if the patient is to have children I personally do not hesitate to do a ventrosuspension, but I do not do this operation alone. I sew both round ligaments for a distance of 3 inches from the uterine horn across the anterior wall ot the uterus, which leaves a V-shaped space such as between my index finger and the thumb, and that V-shaped space of the anterior wall of the uterus is sewed to the anterior peritoneum, so that we have a combination of the round ligament operation on the anterior wall of the uterus and a ventrosuspension over the space of 2 inches. I do it always as a suspension, and not a fixation. It is poor surgery to say that we cannot do suspension, and that many of these operations turn out to be fixations. If we cannot sew the anterior peritoneal layer to the uterus in such a way that only the peritoneum unites to the anterior uterine wall, then it is childish surgery. It is thus possible to do a ventrosuspension for this condition of prolapse, but that is not the only thing. Let us see what else we have to do. In these cases of prolapse of the uterus the cystocele, after all, is one of the most important; there is also a rectocele, and while it does not annoy the patient so very much, the cystocele does. The urinary annoyance in these cases of prolapsus uteri is the least frequent of complaints. You can put the bladder where you please if you do not injure the lining, but if you interfere with the lining either by means of the cystoscope or suture which goes too deeply, the patient may have persistent urinary disturbance for years. With the abdominal operation the bladder will be in proper position by lifting the uterus and sewing it up. I make a T-shaped incision, separate the bladder from the anterior wall of the uterus, push the bladder up 2 or 3 inches higher.

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It is then loosened and I cut away the redundant flap and sew the flap to the anterior wall of the uterus 2 or 3 inches higher than it was. I have simply pushed the bladder higher up on the uterus, and have sewn the vaginal mucosa where the bladder was, and the cystocele is cured permanently. In these cases the cervix must be amputated. As a matter of fact, you cannot get a sufficiently large anterior flap either with the abdominal operation or with the vaginal, which I will speak of in a moment, without resorting to amputation of the cervix. There must be such liberation of the vaginal mucosa around the cervix as to push the flap freely away from the posterior area up to the anterior. This part of the operation in such a case is the same as it is with total prolapse done vaginally. If a woman is thirty-seven years of age, and has had four children, I am not going to refrain from doing the vaginal operation because she may still have five or six children.

Referring to the first paper on the program, which was read by Dr. Hedges, on "Sterilization," I think the doctor was nearer right than most of the speakers gave him credit for. When you individualize and carefully select your cases, you certainly have a right to use your own judgment, and if a woman has had four children, and may have five or six, but wants no more, I take upon myself the responsibility of saying to her, I am going to do for you the vaginal operation, but you can have no more children. Have you enough? Do you want any more? If she wants no more, I think she has fulfilled her duty, and I am going to do the vaginal operation because it is the best for her, and in doing so I sterilize her because I do not want my operation to bring her life into jeopardy afterward, which is not a matter of juggling with our consciences after all. We have the responsibility of these patients as well as our consciences to consider, and we pick out what operation we think is right for the individual case. The vaginal method is to my mind the most ideal operation for total prolapse of the uterus. It brings the uterus out through a vaginal incision; you can take out a wedge-shaped piece from the whole fundus or anterior wall, you can amputate the whole fundus down to the cervix, but that is rather the exception. The bladder rests upon the posterior wall of the uterus and no cystocele can recur. Then comes what I have mentioned in the previous operation, namely, the most important part is to complete the high amputation of this large cervix at or above the level of the internal os, and in many instances in my hands the cervix which I have taken out is as large or larger than the fundus I have left behind. In doing that we circumsize the cervix below the level of the internal os and push the mucous membrane up an inch higher than the margin of the incision from which we started, which means a tremendous redundant area. If you measure the circumference of the mucous membrane when we free it from this attachment, in some instances it is too large. We begin by sewing the posterior part to the posterior wall of the cervix (after amputation) and then pull on this part and that part, leaving absolutely no redundant tissue. Then as you pass sutures laterally you catch the lower borders of the *ligamentum*

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cardinale. This leaves a large redundant flap toward the anterior wall of the cervix, coming partly from the lateral wall of the cervix, but mostly from the cystocele area, the bladder having been separated from its attachment to the anterior wall of the uterus and from its attachment to the vagina and pushed over from the posterior wall of the uterus. You then cut off the huge flap resulting from the ⊥ shaped incision and sew it to the anterior wall of the uterus from the fundus down to the cervix. The posterior fornix is so large that you can put your fist into it; I am not talking about the upper vagina which, of course, is so large that you can put your whole fist into it. In a well operated case it becomes so narrow that you can scarcely get the tip of the thumb into it. Then comes the most important part of the operation, and that is why the Dührssen operation or any particular name should not be attached to the operation because that makes the average beginner think that all he has to do is to fix the fundus of the uterus and he is done. He is not. If that is all he does, the uterus goes back to its old position. In the perineorrhaphy I go up as high as the culdesac and occasionally enter the same. The posterior vaginal wall is separated completely from the area of the proctocele and up to the fornix. I then cut off a big triangular flap of this separated posterior vaginal wall as large as from the anterior wall, and then sew this mucous membrane from the posterior fornix down. When you finish with that part of the operation, not having yet sewn the levator ani, the upper vagina will scarcely admit a finger. When you finally have the perineum made still higher than usual, the caliber of the whole vagina is reduced to a smaller size than it was originally at adolescence, and I do not know of any case where the uterus has come down. If you bolster the vagina up with an ideal operation on the perineum, you have the prolapse cured so absolutely that it is almost an axiom to say you have done better than Nature made it originally. In the perineorrhaphy part the strong levator ani attachment is the important thing. If the outer skin sutures should slough through, it does not matter, if the levator ani sutures only hold. The muscle is to be dug out from the little burrow on either side and the intervening area of the rectum is separated. We bring the levator ani muscles together, we expose them right out with their sheaths and make our union with three or four sutures. We use two superficial figure-of-eight sutures after the levator ani muscle sutures are tied.

In all these perineal operations I have for the last two years absolutely excluded chromic gut. I do not use it for anything in gynecology. I get the same good results with iodized catgut and fewer infections. The levator ani sutures hold, the superficial sutures hold. Chromic gut will stay ten or fifteen days. Since giving up chromic gut and using iodized catgut, healing takes place without a superficial blemish.

DR. GORDON K. DICKINSON, Jersey City, N. J.—Dr. Bandler has brought out some things which came to my mind when these papers were being read. Every man advances according to his errors, and if that be true, I have had quite some advancement because I

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have seen a great many cases of prolapse of the uterus come back to me that were operated upon by various older methods. When I began operating we had the La Fort operation, and then the double barrel vagina, and the uterus would go down through either one of the other channels. Recollect please that you must think while you are working. My operation here was disputed as to its nomenclature, whether it was a hysterectomy or not, and this condition is not a prolapsus uteri, strictly speaking, but simply a herniation of the bladder and the rectum downward. If you pass a sound into the bladder you will find the culdesac going down into the vagina, and if you introduce your finger up into the rectum there is a big pouch, the fecal mass comes down, and it gets into this part, rolls around, and makes considerable trouble in defecation. It is a rectocele, it is cystocele, and the uterus that is prolapsed is not entirely the cause of it. As to the Baldy operation of splitting away the vagina from the bladder and stitching it away up on the uterus, it spells failure if the woman is in the child-bearing age. In doing a thorough job posteriorly, as Dr. Bandler stated it, I like to put a circular stitch around the biggest part of the rectal pouch and plicate it inward by the circular stitch. But the main thing I want to get at is how to keep the uterus up. I had a case come to me from Dr. Kelly on whom a ventrosuspension had been done. The uterus was a foot long and about the size of one finger stretched out. I have done the Gilliam operation; I have likewise done the Baldy-Webster and all similar operations, but find that patients come back with pain and tender spots and distress from hematocele and scar tissue.

Dr. Franklin Martin, of Chicago, in one of the shortest articles I ever saw written on this subject, called attention to the fact that in a woman who is bearing children, if you will bring the uterosacral ligaments or the uterosacral folds around through the parametrium close to the cervix, somewhere about the position of the internal os, and suture them together and to the cervix, you will have a good means of suspending the uterus and holding the cervix, then do the Alexander operation, not the Alexander-Adams operation. Do not split the fascia of the external oblique, but pick it up at the external ring, pull it in nicely, and you will never fail.

Dr. William E. Darnall, Atlantic City, N. J.—The question of procidentia is one that confronts us every day. My experience has been much like that of most of you perhaps. I have gotten most satisfaction from the interposition operation which, if properly done, in older women seems to fill the bill better than anything else. I do just about what Dr. Bandler has described, but there is one point in technic which has not been touched upon. About two weeks ago I read an article by a New York surgeon. He reported some twenty or thirty cases in which the interposition operation was resorted to and they all did badly. All had trouble with the bladder and examination by the cystoscope showed a pouch on each side. This surgeon evidently did not do the operation right. The point I want to make is this: when you push the bladder up with its lateral

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attachments, get the whole thing up, otherwise you will have happen just what happened to him.

DR. HERMAN E. HAYD, Buffalo, N. Y.—I did not intend to discuss these papers, but if I sat still Dr. Goldspohn might think that I had forgotten all I had so often said with reference to the Alexander operation. I continue to do the Alexander operation in properly selected cases. I have, I suppose, forty women and many of them grandmothers in Buffalo who have stood the test of pregnancy which was his challenge to me, when I wrote three papers on this subject. These women are well as a result of a properly performed Alexander operation.

An interesting thing in connection with prolapse of the uterus which has not been brought out in either of these papers or in the discussion is that, in many of these cases the body of the uterus is not prolapsed at all; it is merely a supravaginal elongation of the cervix; the cervix is simply stretched and torn away from the body of the uterus, and as Dr. Bandler says, the cervix, after he amputates it, is as large as the body of the uterus or even larger. That is the reason why properly directed plastic operations upon the cervix, the anterior and posterior walls of the vagina cure most of these women, and only in the extreme cases of procidentia is an interposition operation necessary in my judgment.

Dr. Bandler brought out a very important point in reference to the treatment of the posterior wall of the vagina. We do not remove enough of the posterior wall of the vagina in most of these cases of relaxed and flaccid vaginæ. We ought to take a piece out and extend the denudation away up to the cervix, even to the culdesac. This point I brought out years ago in a paper I read before the Association on perineal operations. I am delighted to hear from Dr. Jones that the round ligament possesses very much value in elevating the uterus. I always thought the round ligaments only brought the uterus forward. In those rare bad cases of procidentia I have preferred to open the abdomen, where there was much prolapse of the body as well as of the cervix and all the vaginal structures, and have done, as Dr. Bandler has said, a ventrosuspension. I like to suspend the uterus higher up than the Alexander operation does.

I am glad to have the opportunity once more to say that I still do the Alexander operation in properly selected cases and am satisfied it is an ideal procedure for uncomplicated retroverted uteri.

DR. HUMISTON.—What do you mean by the tearing of the cervix away from the body of the uterus?

DR. HAYD.—When I remove such a uterus by vaginal hysterectomy, as I do in many cases, where the woman has gone beyond the child-bearing period, and where the uterus is of no particular good, and where I do not want to open the abdomen, I sew the broad ligaments and round ligaments together and incorporate in one of the sutures the prolapsed bladder, lifting it up in place by that suture. In this way I succeed in retaining these lower structures in place. In many of these uteri, if you will examine them and pull on the

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cervix, you will find the cervix has been elongated from the body one-half and sometimes an inch and a half from the stretching and tearing away of the cervix from the uterine body itself.

DR. JOSEPH H. BRANHAM, Baltimore.—My experience has been so different from most of the gentlemen who have discussed these papers, that I want to say a word on this subject. Anterior fixation I have tried in cases of prolapse, when it was first recommended, with very little satisfaction. I have seen operations done by various surgeons who have had results that were very distressing and very disappointing. I do not believe it is a scientific operation. It may be an improvement upon Nature, but it is a hard thing to improve on Nature.

The operation described by Dr. Bonifield in women before the menopause is simpler and will give more satisfaction than any other. After the menopause, if we have a prolapsus, with a large uterus, hysterectomy is the proper operation in my opinion. It gives the best results, it causes less distress afterward, and there is no more danger. In doing hysterectomy we must be careful to bring the round ligaments and part of the broad ligaments together. I now do it through the abdomen and bring the round ligaments together so as to make the proper support, and if you do this, in my experience, you will get satisfaction in nearly all cases. I have seen more distressing cases as the result of chronic infection of the uterus after an amputated cervix than from almost anything else. Amputation of the cervix is, in my judgment, unscientific. I think it is a poor improvement upon Nature, and I do not believe it is a good operation. I never do it, but I have seen a great many cases where the patients were in such a distressing condition that a secondary and very difficult hysterectomy had to be done. It closes up the canal, secretion gets into the uterus behind the amputated cervix, and the patient is about as miserable as you can imagine.

As far as the anterior fixation operation is concerned, I have tried it in a few cases without satisfaction, and I have seen a good many more cases in which it has been done by other surgeons who are experts, and the distressing urinary symptoms and other symptoms were always present. I do not believe it is a good operation.

DR. J. HENRY CARSTENS, Detroit, Michigan.—In the consideration of this subject it seems to me it is largely a question of physiology. What have we got? We have muscles that get tired out. These muscles do not hold anything. It is the fascia that surrounds the muscle that holds everything properly in place, and that never tires, but the muscle does. If you have a torn perineum the fascia is also torn. Generally in operating what do surgeons do? They sew together the muscle and leave the fascia. This muscle soon tires out and stretches. If they get the fascia with each muscle, or most of the fascia, and also what is called the pelvic fascia, they will not have so many failures. As to the interposition operation and all complicated operations, I would urge you to read certain proceedings of the New York Academy of Medicine which were published in the AMERICAN JOURNAL OF OBSTETRICS AND DISEASES

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OF WOMEN a short time ago. In this article a great many failures are reported. It seems to me, it is a very simple plan to operate after the manner described by Dr. Bandler, and I agree with him entirely. If you have a woman who wants to have children, you do the Alexander operation or the Gilliam operation, restore the perineum, and the uterus will stay in place. Why? Because the woman is young. Her muscles are still strong; her fascia is still strong. By an operation you can hold the uterus in position. But let us take an older woman who is at the menopause or who has passed the menopause, and the uterus comes down. You can sew it up, but what is the result? The ligaments become stretched just as they were, say five or ten years before the operation. By and by the uterus comes down again, and you can narrow the vagina just as much as you like. How in the name of wonder a surgeon can do the interposition operation on an old woman, take out the cervix, take off the fundus, remove the tubes and perhaps the ovaries, and retain a little bit of muscle, is beyond my comprehension. One of the worst things after all these operations is a diseased mucous membrane. I have such a woman in the hospital now who has had nine children. She is only thirty-eight years of age, but her uterus is coming down. My conscience is such that in her case I do not think she ought to have any more children. I told that woman that I thought it would be better to take her uterus out. She consented, and I removed her uterus; I stitched the broad ligaments together and hung the bladder on that, and then did the proper perineal operation. That woman has been restored and is now in perfect condition. In these cases I would leave an ovary anyhow so that the woman does not get the tumultuous change. She will have no uterus to come down again, and she will not have any trouble which attends some of these complicated interposition operations. The bladder we can hold up in other ways.

DR. ALBERT GOLDSPOHN, Chicago.—I am now and have always been opposed to the Schauta-Wertheim-Watkins operation, because the endometrium in such a distorted uterus remains open for infection but not for treatment. It becomes a *nolle me tangere*. If all those gentlemen who have had an extensive experience with the so-called interposition operation have not met any such cases, then my objections may be void.

DR. JONES (closing).—My paper was a plea for the interposition operation in cases of complete prolapse in older women, and, it seems to me, that the discussion, with very few exceptions, has emphasized that. I feel that it is an operation which, after you have done it a few times, is not complicated. It is easy to do. It does not take as long to do as the ordinary hysterectomy. When you consider the length of time of the interposition operation, you will find it does not take longer than to do an ordinary laparotomy. It is a great satisfaction to see these patients completely relieved of their symptoms. Those men who have not used it, or have only employed it in a few cases, understand it imperfectly, and if they will perfect their technic and do the operation more, they will get a great deal of satisfaction from it.

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CERVICAL LACERATIONS; THEIR SIGNIFICANCE FOR THE PATIENT.

BY

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(With one illustration.)

It has been to me a question of weighty import for some time why a recent cervical laceration of the uterus is not accorded the surgical attention that an ordinary wound in some other part of the body usually receives. Is it because the trauma is looked upon as trivial, or is it because the laceration is taken care of by nature and heals in the course of time by second or third intention?

It is true, a cervical laceration is not an extensive wound, nor does it ever appear as though it could cause harm. It is only occasionally that a tear in the cervix involves a vessel which requires surgical help to check the bleeding; otherwise, the trauma apparently presents nothing that calls for special attention. Furthermore, the healing of a tear usually will take place; Nature attends to that. However, when and how such healing is accomplished, has so far been regarded with little concern. On account of the concealed position of the cervix, little, if any, interest is manifested as to what is going on at the top of the vagina. The physiologic import of a healthy cervix has attracted but little consideration. When we consider that the cervical cavity serves as a reservoir to the uterine cavity proper, and that its healthy state is absolutely essential to fecundity, it becomes clearly apparent how great an asset it is to the health of a woman.

Any open wound, be it a laceration of the cervix, or a wound involving any other part of the body, invariably presents portals of entry for infection. Such wounds in our present enlightened surgical state usually receive very prompt attention, not only to hasten healing, but also to minimize the amount of cicatricial tissue formation.

Let us take, for example, a wound of the abdominal wall incurred by operation for pus in the abdominal cavity. After the suppurative process has ceased, which is usually in the third or fourth week, and granulations are well established upon the wound surface, it

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would not be up-to-date surgery to allow this wound to heal without giving it proper surgical help. The surgeon would draw such a wound together with sutures, thereby establishing a firm closure in about a week. If such a wound had been left to Nature, healing would have taken place, but it would have required at least three weeks to form a cicatrix consisting of a mass of connective tissue.

Cervical tears do not differ much from such wounds. Their behavior is almost identical. There is perhaps this difference; a cervix after having passed through the onslaught of labor not only presents lacerated wounds of a diverse nature, but it also shows evidence of being much bruised and swollen. Tissues in this condition must not be subjected to surgery. No good could accrue and harm might result.

A cervix traumatized at the time of childbirth will in the course of a few days be bathed in the lochial discharge. Such a discharge is foul and purulent, usually harboring microörganisms sufficiently virulent to inoculate an infection upon the wounded surface. This infection is most commonly of a mild type, because primarily the vagina and the uterus of a normal pregnant woman are free from pathogenic bacteria.

With the cessation of the lochia, which is usually in the third or fourth week, the genital parts directly concerned in labor have in a fair way assumed their normal state. However, the fact must not be overlooked that muscle tissue so compact as that of the cervix, when subjected to severe bruising, requires time for recovery. An additional four weeks will generally find the cervix in a tolerant condition, so that any surgical procedure performed on it will not be met with defeat. By this, I mean, not the performance of a classic trachelorrhaphy, for such a procedure at this time would be out of place, but merely bringing together the flaps of the torn cervix, and securing them with catgut suture after the granulating surfaces have been refreshed by gentle scraping.

This is an operation of minor importance and requires no general anesthesia. It does not confine the patient to bed, and only twenty-four hours of quiet are enforced. No after-treatment, excepting the giving of an occasional cleansing douche, is required. This operative procedure has been very properly called by Dr. Herman J. Boldt, an intermediate trachelorrhaphy.

Now let us ask this question: Has this intermediate trachelorrhaphy any material worth? If we can attribute either directly or indirectly certain gynecologic and neurologic sequelæ to a cervical tear and can demonstrate that such disturbances can be obviated

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wholly or partially by an intermediate cervical repair, then the question must be answered affirmatively. However, if this cannot be demonstrated, then the question must receive a negative reply.

It has long been a matter of much interest to me why so many women who have been well and strong, free from aches and pains before having given birth, should develop soon after their firstborn a condition entirely foreign to their former selves. In the common vernacular of such mothers, their feelings can be phrased (and we are all familiar with the expressions) like this: "The baby has put a kink into me," or, "The baby has taken the starch out of me," or a still more forceful one, "The baby has put me on the bum." These expressions give a fairly good idea of how such mothers feel.

A cervical laceration is an injury which, like any other trauma, causes the tissues so involved to suffer from a lowered resistance. Nature in its efforts to heal such a trauma will unbend its energies to accomplish some sort of a result.

Let us, for instance, consider the most common pathology of the cervix uteri, an erosion. The lesion is the outward sign of changes in progress throughout the cervical canal. It is the result of an endocervicitis most frequently caused by a laceration which nature could not satisfactorily heal. These lacerations are not deep, and are usually of a stellate variety. Nevertheless, we have here a trauma which has created a fertile surface for the reception of toxic products. The pathology of this condition (endocervicitis) presents itself in a rapidly moving picture from the stage of subepithelial lymphocytosis to the stage of subepithelial fibrosis. As a result, there is established a leukorrhea, a glossy, semifluid, tough, mucous discharge, produced by the follicles. When this mucus is mixed with the creamy-colored vaginal secretion, it becomes whitish; and is known by the laity as "the whites."

Nature is unceasing in its efforts at repair, and often the discharge progressively diminishes as the glands become occluded through tissue hypertrophy. Such a state establishes a permanent change in the cervical tissues and creates a condition that invites further trouble.

A well-established cervical erosion causes pain in the lumbosacral, hypogastric and ovarian regions, and ofttimes down the thighs. A nuchal pain is not infrequent. The lateral variety of cervical tears, on account of their location and their depth, forms a very important chapter in cervix pathology. When a lateral tear reaches into the zone of vaginal attachment, the efforts of Nature will scarcely succeed in causing such a wound to unite without the

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formation of a large amount of fibrous tissue. This does not happen when the tear is in the body of the anterior or posterior lip. The reason for this must be sought upon a mechanical basis. Be it a lateral or a bilateral tear, the tendency for the lips to gap is great. This is augmented when the patient gets up, by the intraabdominal pressure driving the cervix against the posterior vaginal wall. This pressure forces the lips of the cervix asunder, and eversion of the lower part of the cervical canal is the result. By this eversion, the mucous membrane of the cervix becomes exposed to friction and to pressure.

Such an open wound cannot escape infection; and, in the course of time, the two cervical lips give evidence of enlargement and induration, commonly designated as a hyperplasia or a hypertrophy of the cervix. Associated with this pathology, we invariably have at one time or other, or constantly, according to the general health of the patient, the cervical erosion and the leukorrhea.

If pathologic conditions were to find their limit here, the future comfort of the patient, could be given a better assurance. However, on account of the lowered resisting power of the traumatized cervix, other morbid conditions will align themselves. A laceration of this character is a common cause for the uterus to remain enlarged and congested. It is a direct hindrance to its physiologic involution, thereby greatly arresting Nature's efforts to heal these tears.

Such a condition of prolonged congestion is prone to produce alterations in the myometrium. The musculature of the uterus will eventually become relaxed and softened, causing the organ to lose its stiffness, thus favoring flexion. Later, on account of its abnormal size and weight, a retrodeviation becomes almost inevitable.

Not an unusual accession to this pathologic picture is a chronic endometritis, this condition having been encouraged by its close kin, chronic endocervicitis, after the natural barriers to infection about the internal os have been broken down.

A chronic endometritis, although not a common affection, invites a pathology very deleterious to the myometrium. It is characterized by a diffuse fibrous overgrowth and a corresponding muscular degeneration. Eventually it creates a condition known as fibrotic metritis. A uterus so afflicted is tender and soft in the earlier stages, becoming hard and painless later. Leukorrheal conditions are always present, the enlarged corporeal glands frequently occasioning a watery discharge, especially marked just after the period. The menstrual loss is excessive and is accompanied by an aching, bearing-down pain, referred to the lower abdomen, sacral

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region and vagina. The dyspareunia, which is frequently complained of when the uterus is tender, is likely to prevent conception. Allowing liberally as to the walks of life and the state of health these women might be in, my observation has been sufficiently convincing to make the definite inference that a lacerated cervix, when left to nature, exercises a harmful influence upon the general health of most women.

When a lacerated cervix is repaired within six to eight weeks after childbirth, it has been my experience that such repair will be a potent factor in maintaining a healthy balance in the economy of the woman.

Having cited the principal pathologic changes and mechanical deviations that frequently manifest themselves as direct sequelæ to a cervical tear, permit me to somewhat broaden the limit and dwell upon certain neurologic phenomena that depend for their origin upon just such morbid changes in the sexual apparatus as have been enumerated.

It is questionable with me whether or not a gynecologic disorder can produce a purely neurologic disease. When we speak of a reflex neurosis, we simply pass beyond the horizon of our knowledge. It is a convenient way of designating the manifestations of nerve-energy exhaustion. However, as long as there is a gynecologic pathology and a nervous system, reflex disturbances will be recognized by the gynecologist, and it will always remain a diagnostic problem to interpret rightly those nervous symptoms associated with minor lesions of the female reproductive organs from those of a distinctly nervous origin.

The equipoise of a woman's nervous organization is very unstable. A slight jarring may disturb the balance of healthy action, causing the nervous force to wander off in strange paths, and in its erratic play reveal various nervous phenomena, such as irritability, temperamental vagaries, nervosity, periods of depression, vertical headaches and backaches.

There are few women who have a nervous system of a normal type. There are many who have congenital or acquired defects in their nervous organization. The latter obviously manifest greater reaction and more pronounced protean symptoms than the former, under the strain of a physical irritation. The protean symptoms come not from the uterus, but from a weak nervous system whose nerve tone was not strong enough to cope with the excessive irritability caused by a cervical disease. Under such a condition it is the nervous manifestations that should draw attention to a lesion of the cervix.

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The sympathetic nervous system is always alert to make the most of any physical irritation; and with the aid of the endocrine glands may readily create a complex of reflex symptoms which may work physical and physiologic havoc in a woman whose nervous organization is weak. Women under such a persistent tension and hereditarily inclined toward a neuropathic disposition, are able to resist pain less, brood more over their ailments, fear more for the future, and are less able to judge calmly. Hence they feel more acutely, and readily increase their troubles by fixing their attention on them. They imagine that they are going to have other diseases, and ultimately become confirmed neurasthenics.

Another phase of this subject may weave itself about the woman having a strong nervous system, the so-called "normal type." It is assumed, and correctly so, that a cervical lesion, although producing definite local symptoms, will in a woman with a normal type of nervous organization cause no reflex symptoms. Nevertheless, if this woman has a leukorrhea which she may regard without concern for the first few months, but finds that the discharge is becoming aggravated, the barriers that keep her nervous system in normal balance will eventually weaken and sooner or later she will become obsessed by psychic influences that in every respect will parallel the condition of the woman with a weak nervous organization.

There is no doubt that continual pain or discomfort makes a weak nervous system weaker, and that anxiety about supposed disease makes a nervous patient worse.

When we endeavor to sum up the different factors responsible for these neurotic manifestations, prominence must be given to a psychic element, that is, fear, acting on a mind already taxed by the existing pregnant state. The mental factor coöperating with the exciting fear factor over a period of many months must unquestionably produce an amount of strain; under such a worry, a lowered resistance of the nervous force must result, thus making it the more easy for an irritation factor in the sexual apparatus, such as we find in the cervical lesions, to become potential in disturbing the balance of healthy action, even if the woman has a nervous system of the normal type.

When such nervous phenomena manifest themselves in a young mother, who before giving birth did not exhibit such protean reflex symptoms, it must be inferred that the key to these disorders will most likely be found in a damaged sexual apparatus, traceable principally to a lacerated cervix, and its associated lesions. It is, therefore, pertinent to assume that an early repair of a cervical lesion, such

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as is usually caused by childbirth, is the logical solution in anticipating endocervical disease with its distressing neurologic sequelæ.

The technic of the operative measure is simple and is in accord with procedures employed for all granulating wounds. No general anesthetic is required. With the patient in the lithotomy position,

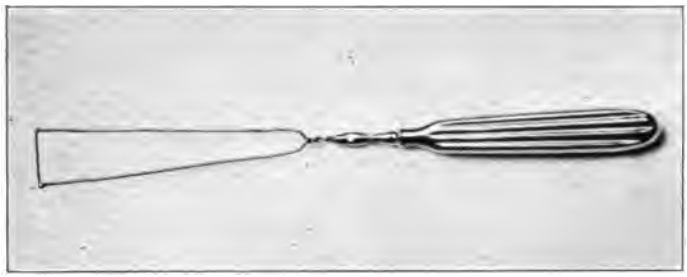

FIG. 1.—Wire curette for refreshing the granulating surfaces of the cervical tear, the cross wire taken from a Gigli saw.

access to the cervix can be readily gained by inserting a Simon's speculum, care being taken not to traumatize the sensitive perineum. Surgical cleanliness is rigidly enforced.

With the aid of tenacula, the lacerated portions of the cervix are approximated as a preliminary test step. Small, partly detached tissue masses are cut away with the scissors, that a good coaptation of the torn surfaces may be obtained. No paring or cutting of the wound lips is necessary. A wire curette (the wire of this special curette is from a Gigli saw), will answer all purposes (Fig. 1). The granulating surfaces are gently curetted, particular attention being given to the angles of the wound.

Free bleeding will result. The freshened surfaces are next approximated and secured with chromic catgut (No. 3). The number introduced is governed by the extent and character of the tear. It is advisable to have a continuous irrigation while tying the sutures, that all blood from the surfaces to be approximated may be washed away. A cleansing douche is given daily for a week, and the patient is asked to remain quiet for two or three days.

DISCUSSION.

DR. REDER.—As I grow older in my work, I appreciate more and more the little things which I formerly often disregarded. Girls I have known in childhood, grew up into womanhood, married, and who were perfectly well, appeared to have gone to pieces after

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having their first baby. So pronounced was the change that some of the husbands said to me, "My wife has changed very much, doctor. I do not know how to account for it." As a personal matter, I asked permission to examine about ten of these mothers whom I had known during their childhood, and who had always enjoyed excellent health, in order to determine the extent of the cervical laceration. The examination was made six to eight weeks after the birth of the child. I found in each instance that these lacerations were sufficiently extensive to require attention. The intermediate trachelorrhaphy was performed and I have been gratified to find that these women have been quite free from aches and pains.

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ACUTE DILATATION OF THE UTERUS.

BY

N. STONE SCOTT, M. D.,

Cleveland, Ohio.

A REVIEW of the literature, with only a score of cases by a much smaller number of reporters, gives the impression that acute dilatation of the uterus is of infrequent occurrence and of little more than didactic importance. A study of the six cases, which forms the basis of this paper, has brought me to the conclusion that acute dilatation is not rare and has furnished an explanation of this apparent scarcity.

To Kossman must be given the credit for having first called the attention of the profession to the possibility of an acute dilatation of the uterus. In 1904, he reported two cases of uterine paralysis, in the nonpuerperal uterus, with increase in size of the uterine cavity. He was violently opposed by Strassman who explained Kossman's cases on the supposition that they were due to perforation on the lateral aspect of the uterus with the passage of the instrument into the folds of the broad ligament. He (Strassman) goes on to report various illustrative cases of his own, most of them evidently examples of true perforation; one, however, answered all the conditions of acute dilatation of the uterus, though he failed to recognize it as such.

This controversy was ably discussed *pro* and *con* in the scientific societies of Europe during the next two years by Asch, Geyl, Kieffer, Schäffer, von Tussenbroeck and others.

Dr. Catherine von Tussenbroeck believes that a slight dilatation of the uterus during curettage is a frequent occurrence. She says, "I have seen this so often, I might almost say, so regularly, that everyone who is accustomed to doing curettage must be acquainted with the phenomenon." She reports four cases of her own in which the depth of the uterus was from 1 to 4 cm. deeper at the end of a curettage than at the beginning. She also reports one case of a high degree of dilatation. The patient, twenty-seven years old, was curetted for dysmenorrhea. Bimanual examination revealed a virgin uterus in sharp anteflexion. During the curetting the uterus lost its tone and changed to a flaccid sack, when suddenly the feel to the curette was as if there were no wall present. The curet was

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immediately withdrawn, nothing further was done except to swab out the cavity with sterilized gauze and fill it with iodoform. Ice was applied to the abdomen; there was no bleeding. Convalescence was uninterrupted.

This author recognizes the fact that there is nothing in the anatomy or physiology of a normal uterus to prevent atony and presents a plausible theory accounting for enlargement of the organ as it occurs in connection with relaxation, pertinently adding that "relaxation of a muscle, in itself, does not constitute increase in its length." She rejects, with good reasons, Doleris' and Geyl's interpretations. The former ascribes the distention of the cavity to the stretching of the relaxed muscle by the impinging instrument; the later, to the entering fluid or air overcoming not only the passive resistance of the musculature, but intraabdominal pressure as well.

Schäffer contends that the dilatation is due not alone to motor, but to a combination of motor and vasomotor influences.

Granting that this tone relaxation of the afferent vessels occurs coincidently with the tone relaxation of the musculature, we have, then, an increased blood supply in the relaxed uterus. The atelectatic spaces (Kieffer) are filled with blood, the whole uterus swells and stiffens, like an erectile organ. If the tone relaxation of the vessels and the muscle remain entirely coördinated, the phenomenon will end as it began, simultaneously, the congestion will disappear, the muscle contract, the uterus is again in repose. However, should incoördination occur, congestion will disappear before the muscle regains its tone, the uterine wall becomes flaccid, and complete paralysis results.

This spirited discussion of atony of the uterus, carried on in the European societies for two years, has had no perceptible influence on the literature except to secure for practically all the text-books written thereafter the incorporation of the statement, that, "the uterus is subject to acute dilatation." However, as one looks up the literature on the use of the curette he will find that to-day, the same as when that useful instrument was first invented, all the authors place great stress on the danger of perforating a soft uterus and cite numerous examples to emphasize the point.

Maier, in 1906, published an interesting paper in which he says "I remember a number of cases of uterine atony occurring during the curettage of puerperal uteri, of which the following history is a type:

Mrs. J. W., aged thirty-six, multipara. Curettage for retained secundines two weeks after a four months' abortion. Suddenly, in

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the midst of the curettement of the anterior wall, the instrument entered the cavity of the uterus a distance of 20 cm. Placing my hand on the abdominal wall, I folt the uterine wall cnntracting on the end of the instrument.

Of acute atony in the nonpregnant uterus, he says, "since the publication of Kossman's paper, I have been able to demonstrate to myself and others this tone alteration with relaxation of the uterine muscle." He further cites four cases:

(1) Sudden relaxation from a depth of 9 cm. to 15 cm.; (2) from a depth of 8 cm. to 13 cm.; (3) depth at beginning 7.5 cm. suddenly increased to 12 cm.; (4) from a depth of 9 cm. to 15 cm.

If one observer can report four cases in two years, it would seem to point to the possibility that the condition is not one of great rarity. On the other hand, when one reviews the literature and finds but scanty reference to the subject, it is natural to infer that the subject is one of great rarity. I am free to admit that, in spite of the first two cases I shall report to-day, my fixity of mental attitude on the subject, due to my early training, which was of the conventional type, and is still to be found in the modern class room, prevented my grasping the scientific import of the facts until quite recently. I am now thoroughly convinced that the condition is moderately frequent and of great importance to the patient, for if the surgeon has not the possibility of acute dilatation in mind he may cause irreparable injury, since he is prone to institute the wrong course of procedure or leave unfinished a necessary operation.

Turning to medical history, analogies of the supposed rarity of certain forms of disease are abundant and striking. It is much less than a hundred years since the inflexibility of mental attitude of the medical men of his day led to the persecution of Semmelweis when he announced his belief that puerperal fever was infectious. All of the older men of this Society have a personal recollection of the period prior to 1886 when appendicitis was considered a great rarity; moreover, many members of this society have been leaders in the movement which has in so short a time educated not only the profession but even the laity to a realizing sense of the frequency as well as the treacherousness and oftentimes the insidious character of appendicitis.

The present generation marvels at the attitude of mind of the fathers in the profession in regard to the questions in connection with the frequency of appendicitis, extrauterine pregnancy, ulcer of the stomach and a host of others; may it not be possible, nay, is it not even probable, that the next generation will review the

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opinions of this generation in regard to the question of acute dilatation of the uterus in much the same way?

As a basis for this paper, I wish to report the following six cases, four from my own practice, and two from that of Dr. A. C. Scott, of Cleveland:

CASE I.—Twenty-five years ago, while associated with my father, the late Dr. W. J. Scott, a young woman came under our care suffering from a miscarriage. She was twenty-six years of age, two and a half months pregnant, the mother of one child, two years old. Her temperature and pulse were normal; she was in good physical condition. The uterus was not unduly large for a ten weeks' pregnancy, and was normal in shape and position. On account of the hemorrhage, which was not excessive for that stage of the abortion, a curettement was decided upon and was begun in the operating room of the Cleveland General Hospital.

The interior of the uterus was gone over carefully, the normal amount of placental tissue, corresponding to the age of the pregnancy, was removed, after which the feel of the uterine wall was entirely normal. The site of the placental implantation was the right uterine cornua. With the removal of the placenta, the bleeding materially lessened. I was just on the point of stopping the operation when, as a matter of extraprecaution, I decided to lightly explore the uterine cavity. I did so and as I passed the curette toward the right cornua, it suddenly went in up to the handle; it went in easily, without the application of any force; it seemed as if there were no uterine wall to oppose the instrument. There was no increase of bleeding, no shock, in fact no appreciable change in the general condition of the patient. An immediate consultation was held, and we decided that it was probably a uterine perforation, and that our best course was to return the patient to bed for observation, with the expectation of opening the abdomen should any unfavorable symptom supervene. Further treatment was, however, unnecessary as her convalescence was all that could be wished. I am now satisfied this was a case of acute dilatation.

CASE II.—Fifteen years ago, in response to an urgent request, I found Mrs. B. in the midst of a miscarriage of a three months' pregnancy. She was a large woman, weighing 220 lbs.; aged thirty-four years; the mother of two healthy boys, aged ten and seven years, respectively. This was her fourth pregnancy, she having had a miscarriage several years before at about the fourth month. The temperature and pulse were normal and a vaginal examination revealed nothing out of the ordinary. A tamponade was employed to control bleeding, while preparations could be made for an operation, which was carried out in the course of a couple of hours. On removing the tampon, it was found that the size of the uterus was much increased since the former examination; its superior outlines were very indistinct; in fact, with the exception of the cervix, the uterus could scarcely be palpated; even the cervix partook of the flaccidity and was easily dilated.

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The interior of the uterus contained a quantity of blood-clots but not enough to account for the size of the uterus, which was fully 12 inches in depth. No fetus was found; the placental implantation was high up in the left horn, not larger than a normal four months' pregnancy. With the removal of the uterine contents, there was a great reduction of the bleeding, although the uterus did not contract down, as does a normal uterus at term when its contents have been expelled. The uterus was lightly packed with a strip of gauze, and a hypodermic of ergotol was administered. The after-treatment consisted of the administration of 2 grains each of ergotin and quinine once in three hours. By the second day the uterus had apparently contracted down, after which convalescence was entirely uneventful.

CASE III.—Mrs. D., aged twenty-three years, a short thick set woman, the mother of one healthy boy, four years old; had always enjoyed the best of health. During her second pregnancy, intercourse seven weeks after menstruation was not painful at the time, but a couple of hours later, during the night, was followed by a severe pain, which was accompained by a moderate bleeding, which subsided in about two days, and for two weeks nothing further was noted. Then at night, at about the end of the second month of pregnancy, she was awakened by a severe bleeding, which was not attended by any pain.

By the time I reached the patient the bleeding had almost ceased. Rest in bed and an opiate were prescribed, but on the second day it became evident that the loss of the fetus was inevitable and a curetting was advised. At this time we ascertained that the uterus was 4 inches deep.

She was taken to Emergency Hospital, etherized and prepared for operation. On making a preliminary examination, I was struck by the changed condition of the uterus; my first passing thought was that the uterus was much smaller than at the time of the examination during the consultation. On careful examination, I determined that what seemed to be the small uterus was only the cervical portion, and that the body was much larger and almost indistinguishable. There had been a very great change from the conditions found a few hours before. The character or amount of the bleeding had not been altered.

On passing a probe into the uterine cavity it entered a full 12 inches in the midline, but at either side the depth was 14 inches, the instrument could be felt, apparently, just under the abdominal wall. The uterus seemed to be empty; for some little time nothing was removed by the curette but a little free blood, no clots, no placental tissue, no fetus. I had gone over the entire uterine cavity with ordinary thoroughness and found nothing, save a few shreds of membrane. Dr. Koller, chief of the hospital, who was assisting, remarked: "Did you say that she is less than three months pregnant?"

On being assured that he was correct, he said (with, as it seemed to me, a decidedly skeptical look on his face): "A uterus the depth of a full-term uterus, it seems to me a very remarkable case."

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We then again went over the uterus carefully and found nothing until we came to the left horn; here the curette first brought away a little placental tissue. At the extreme tip of the left horn the placenta was found, the curette had at first passed entirely over it, but the amount was not more than would be expected with a pregnancy of ten weeks.

As soon as the placenta was removed, the bleeding very much diminished, as happens with any ordinary miscarriage, and this notwithstanding the uterus still remained in its dilated condition. It was thus evident that the diminution of the bleeding was due to the inherent hemostatic properties of the blood and the blood-vessels, and not to the control of the bleeding by the contraction of the uterus, as is apparently the case following normal delivery at term.

The operation was completed by swabbing the uterine cavity with iodine solution and lightly packing the uterine cavity with gauze. Ergotin and quinine, 2 grains of each, were given once in three hours; by the following day the uterus had contracted to almost its normal size, and from then on convalescence was uninterrupted.

CASE IV.—Two years ago Dr. A. C. Nash telephoned me saying: "I wish you would see a patient with me, she has a condition such as I have never seen before; she is a well-built German woman, thirty-five years old; has had three healthy children; in this her fourth pregnancy she has aborted at two and a half months. I saw her yesterday and removed the ovum which was lying in the vagina. I am positive it could not have been more than a three months' pregnancy. The amount of bleeding both before my call and after has not been excessive, not more than one would expect with a three months' miscarriage; her temperature and pulse are normal. I have explored the inside of the uterus with a curet, it is perfectly empty, and yet she has a uterus which extends as high as the umbilicus and is 8 inches in depth."

I saw her in consultation twenty-four hours after the completion of the miscarriage and confirmed the observations.

Mrs K. was estimated to be 5 feet, 5 inches high, and to weigh 120 pounds. Her temperature was 98.2° F., her pulse 72. All the vital organs, aside from the generative organs, were normal. The abdomen, owing to former pregnancies, was flaccid, covered with only a moderate panniculus adiposus, not over three-quarters of an inch thick, permitting an easy examination of the abdominal and pelvic organs. The uterus extended to the umbilicus; its consistency was decidedly flabby; the fundus was irregular in outline, due to the presence of a small fibroid situated in the left horn. On exploring the uterine cavity a small amount of blood was seen to trickle slowly out of the external os, but with this exception the uterus was entirely empty; there were no blood clots present, although the depth of the uterus was 8 inches from the external os to the fundus. Its walls were carefully explored with a dull curet and were perfectly smooth; the site of the implantation of the placenta could not be determined; nothing abnormal was found except

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the size of the uterine cavity and the fibroid in the left fundus. There was not, as a result of the exploration, any excessive hemorrhage, nor had there been at any time during the miscarriage.

The uterine cavity was swabbed out with an iodine solution, lightly packed with gauze, and the patient returned to bed in excellent condition. Two grains each of ergotin and quinine were given once in three hours. The following day the gauze packing was removed; the size had diminished more than half; in another two days the uterus had returned to its normal dimensions. From this time on convalescence was uneventful.

The history of this case corroborated and emphasized the thought which had come to me while treating the former case, that is, that the size of the uterine cavity which it may assume, without overdistention, depends mainly upon its growth prior to pregnancy, and that the great growth due to the increase in size of its musculature during pregnancy is for the expulsion of the fetus primarily, and has little, if any, bearing upon the capacity of the uterus. This same theory holds true of muscular development elsewhere; the thin arm has just as great amplitude of motion as the thick one, but is deficient in power, so also of the uterus in a somewhat similar way.

In addition to these four cases of my own, I have a personal letter giving the details of two similar cases, which have occurred in Cleveland and seem to me worthy of record.

CASE V.—Patient, aged thirty-two years, has three children, all healthy. She had a miscarriage at about four months, dating from the last menstruation; conditions found at the time of operation corresponded with the history. Patient was seen first one week after the onset of the miscarriage; at this time there were symptoms of sparemia, with bloody discharge of a foul odor. Under ether anesthesia the uterus was explored and found to be 5 inches to the fundus; the body of the uterus was soft to the touch.

After the usual preparations, an attempt was made to empty the uterus of its contents, consisting of the greater part of the placenta, and blood clots. There was quite profuse bleeding upon detachment of the placental fragments.

During the operation, and after the detachment of the placenta, upon inserting a curette the walls of the uterine cavity could not be reached. The first impression was that the softened wall of the uterus had been perforated with the curette, although care had been taken throughout to avoid this accident. One blade of a long placental forceps was carefully inserted, the upper part of the uterus was reached, and with a hand on the abdomen this could be felt just above the umbilicus. The bleeding at this time was not perceptibly increased. A hot intrauterine douche was immediately used with manipulation and massage of the uterus over the abdomen, and the anesthetic stopped. Under the influence of the heat and massage, the uterus was felt to contract with the expulsion of considerable blood clots. A dose of ergotol was given hypodermically. There

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was only slight bleeding during the day. The patient made an uneventful recovery.

CASE VI.—This was similar to the case just detailed, although the dilatation was not so high a degree, a miscarriage at three months with a sapremia. The uterus was felt to dilate while curetting and was followed immediately by firm contraction.

From a careful study of my own cases and those of others, I have come to the following conclusions although I realize that the number is too small, and the territory traveled is too new, to furnish a basis for dogmatic assertions. I doubt not but that some of these conclusions may be modified.

Acute dilatation during the early months of pregnancy presents a marked difference from acute dilatation at term, in that it has no appreciable influence upon the bleeding. The more or less complete hemostasis occurring after the complete separation of the placenta, after an ordinary miscarriage, depends upon the hemostatic properties of the blood and blood-vessels, and this is not materially modified by an acute dilatation.

A uterus at full term, which has been emptied of its contents, will have an alarming hemorrhage, if it does not contract down and control the bleeding by muscular action. This is due to the changes in the blood-vessels which have taken place during the pregnancy. Should a contracted uterus lose its muscular tone and again dilate, the same alarming hemorrhage will supervene.

Some of the authors believe that acute dilatation is a phenomenon of sepsis. Maier thinks acute dilatation will only occur where there has been a prior disease of the muscle wall.

It seems to me that the cases reported to-day bear out the theory that the lesion must be in the uterine cornua, where interference with the uterine innervation will be most marked. Three of my cases had a placental implantation in one or the other horn, and the fourth had a small fibroid in the same place. Among the cases reported, great dilatation occurs only in those which had been recently pregnant.

Acute dilatation of the uterus is not the rare condition a study of the literature would seem to indicate and is one of great clinical importance.

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DISCUSSION.

DR. HUGO O. PANTZER, Indianapolis, Indiana.—In confirmation of the doctor's observation, I wish to report two cases occurring in my practice within the last seven weeks. I shall take pains to write out the histories in full for later publication, but I will briefly allude to them now.

The first case was a woman operated on for appendicitis, who had had continuous bleeding for six weeks. She was thirty-eight years of age, had been married many years, but never before pregnant. The breast changes were indifferent and the diagnosis of pregnancy was left in doubt. Fibroid as a possibility was entertained. Upon dilating the uterus I found the phenomena the essayist has described, and for a moment was in doubt as to whether I had perforated the uterus or not, and then with an instrument I felt a perfectly intact wall as I thought. I then opened from above and found the uterus to be relatively small, but not perforated. I removed the fetus through an opening in the uterus.

The second case is interesting. The patient was a young unmarried woman, thirty-eight years of age, who underwent curettage preceding an operation for the removal of multiple fibroids, and I found again the same phenomena. In opening from above I found the uterus normally enlarged by the fibroids within its walls, but otherwise not dilated. I removed these fibroids without having a repetition of the phenomena.

These cases are more frequent than we have heretofore expected from the reports in literature.

DR. EDWARD J. ILL, Newark, N. J.—I have heard of these things happening a number of times, but I have never seen them. What I have seen is this: when we thought we had that sort of thing, the curette or sounds had passed through the uterus below the os internum or low down through the posterior wall of the uterus into the peritoneal cavity. Here is my friend from Indianapolis who, when he opens the abdomen, does not find what he has been looking for. Nobody can tell me that a uterus 5 or 6 inches deep is going to reduce to normal size in two minutes. I rather think Dr. Pantzer had perforation of the uterus low down behind or at either side. Possibly the instrument went into the cellular tissue. I have seen a crochet needle go into the cellular tissue behind the uterus. In the cases under consideration you have one of two pathologic conditions, either a fatty degeneration of the uterus or a great relaxation, as we get in abortions with much bleeding. In these cases the instrument though held lightly between two fingers will go right through into the peritoneal cavity. I have seen it again and again. This has happened to my assistants and my colleagues and myself. At one

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time, some years ago, as I brought the curette back, it had little tissue in it, and I teased it apart with potash solution and found there was fatty degeneration of the muscles. I have no proof that a uterus 3 inches in diameter will dilate to 6 inches in diameter and recontract as soon as the abdomen is opened. If there is a big clot in it we may understand it, otherwise I cannot see why it should be so. When a uterus is found large and soft and we fear going through it, we have always used some of the fluid extract of cotton root, a teaspoonful two or three times in rapid succession. Then you get firm contraction of the uterus and one is not apt to go through it.

DR. WILLIAM H. HUMISTON, Cleveland, Ohio.—I wish to detail a similar case that I have had in my own practice. I have punctured the uterus oftener than I know of. In one case I was demonstrating to the class how to avoid perforating the uterus. The woman had had several attacks of appendicitis and was in an attack of this disease when abortion took place. I told the students that a uterus that was three months pregnant was as easily perforated as a piece of red-brown paper. I took my dull curette between my thumb and finger, pushed it in, and it kept going on in without any effort. I told them I had undoubtedly perforated the uterus; that I was going to open the abdominal cavity, which I did, and found that I had punctured the uterus, although I had told the students how to avoid it. I removed the placental tissue that was left, and examination disclosed a puncture in the posterior uterine wall. I removed the appendix, stitched up the hole in the uterus, cleaned out a few clots in the abdominal cavity in the culdesac and she got well. I cannot see how a uterus can change so suddenly, a uterus in which I have curetted to remove the placental tissue. I had a perfect torrent of blood and had to use salt solution to stimulate contraction of the organ, and to avoid bleeding afterward I always pack the uterus full with iodoform gauze as well as the vagina.

I believe we all perforate the uterus much more frequently than we realize. I have had cases of sepsis following curettement at home. These patients were brought into the hospital in a condition of sepsis; we have opened the culdesac, have found pus, and drained it out, and six or eight weeks later in making a radical operation for the removal of a diseased tube and ovary, with adhesions, we have found evidence where the uterus was perforated. I think that notwithstanding the utmost care we can readily perforate the uterus, and I cannot reconcile how in these cases the uterus so suddenly becomes 8 or 10 inches in depth, unless the uterus is measured and the curet has slipped through it.

DR. WILLIAM E. DARNALL, Atlantic City, N. J.—We have all punctured the uterus, and we know that we can do it very easily; but what Dr. Humiston has said does not explain why a uterus that was 2½ to 4 inches deep suddenly becomes 6 or 8 inches deep when the sound or curette goes clear to the top. It is true, we may puncture the uterus, but the other thing is true, too.

I am quite certain I have never seen a paper on this subject except by my friend Maier of Philadelphia, which was published three or

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four years ago. In some cases of miscarriage I have operated upon, the uterus has suddenly ballooned out. I am just as sure of that as I am sure that I stand here, because I measured the uterus and proved to myself it had not been punctured. I have had some ten or a dozen cases of this sudden dilation of the uterus. In some of them the abdomen was opened, and after the most careful search no evidence of any puncture was found. I have rather believed the condition to be due to the anesthetic. When you get that sort of condition, the uterus balloons out, and you suddenly find that the uterus is 6 or 8 inches deep instead of 3 or 4 inches, if you stop the anesthetic, the uterus will contract down to where it belongs. I believe the condition may occur and that it is quite common.

Dr. James E. Davis, Detroit.—I think the paper of Dr. Scott is unusually valuable, and I wish to call tatention to two or three points, two of them in connection with the physiology. When a muscle is gently or moderately stimulated with an electric current contraction results. For a time we may direct the current upon the muscle that is bellied out in contraction, but after continuing the application of the electric current until extreme irritation is reached, then the muscle wall will flatten out, so that we have a muscle of increased length. Coupling this with the condition to which Young has recently called attention in regard to the enzymes or the hormones that are produced by the epithelial chorion in pregnancy, which brings about a condition of edema in early pregnancy, it seems we have two conditions that may explain what we have taking place and to which the author has drawn our attention. The epithelial chorionic villi throw out during the first three or four months, according to Young who studied this question carefully from about seventy-five histological sections, an enzyme which has the effect of producing first edema, and later on a marked dilatation of the blood-vessels. In fact, this edema may be so marked as to extend throughout the entire body, making that condition which all of us have clinically taken to be some error in the kidney condition, but it has really been due to the enzymes eliminated or produced by the trophoderm layer of the chorion. This produces a marked edema, and with this marked edematous condition of the entire muscle of the uterus we can have a condition that makes for easy stretching or dilatation. Acute dilatation of the heart has been commonly noted, and it has occurred very suddenly under certain conditions of great irritation. I believe that the explanation of these cases is just as has been noted. There has been as a previous discussant has said a marked hemorrhage taking place sufficient to fill the upper part of the uterus, perhaps plugging of the uterine cavity by the fetus taking place in the lower segment, and the tremendous hemorrhage which is there collected causing dilatation of the upper part of the uterus. That is drained away by the time exploration is made but the history has failed to record the hemorrhage, yet the uterus is left in a dilated condition in consequence thereof.

Dr. J. Henry Carstens, Detroit.—We have all probably seen

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the class of cases under discussion. It seems to me, it is something like Dr. Davis says, we have a uterus that is very firm, but as a result of profound anesthesia there is relaxation of the muscles. It is not that dilatation that we get in the heart muscle where there is something in the heart that can dilate it, but it is simply a relaxation, the muscles are flabby, and when you introduce a sound into the uterus, the muscles not having undergone fatty degeneration or an edematous condition, you simply shove it away up and it seems the uterus is ballooned when it is not. It is of the normal size except that its walls are thin, and you simply push the uterus up because of this flabby condition of the muscle.

DR. HUGO O. PANTZER, Indianapolis.—There is no doubt that there was nothing but a dilatation in my cases. I was very careful to prod in different directions. I used a curette dull enough not to perforate the uterus, and I could exclude the possibility mentioned by Dr. Carstens. Dr. Carstens has very aptly quoted the heart as a parallel. What is the difference between the heart and uterus? If the heart can dilate suddenly, the uterus can do it. I do not wish to elaborate on my cases at this time but I am absolutely convinced that I did not perforate the corner of the uterus. I went in on the opposite wall and was absolutely sure I had not perforated the uterus before I opened the abdomen and found the perforation. In one case I had an embryo to deal with, and in the other case I had five or six fibroids within the uterine wall. The parallel of the heart is something like that to which I called your attention.

DR. EDWARD J. ILL.—Will Dr. Pantzer tell us whether he ever saw a 3-inch heart dilate to 6 inches?

DR. PANTZER.—Yes, and it could be easily proven.

DR. SCOTT (closing).—I wish to express my thanks and interest in the discussion that my paper has elicited. I did not expect such a confirmation as I have heard here. Those who have said they cannot understand the situation, simply have overlooked the possibilities in their cases and have not had it in their minds, if they have seen cases at all. I can readily understand that a practitioner may go through a life time of practice and not run across this kind of thing, and it is not natural for him to understand what he has never seen and what he has grasped as a possibility.

The question of the anesthetic causing this can be excluded. One of these cases I have reported had no anesthetic at any time. The observations were made when the patient was not under an anesthetic. The observation I made twenty-four hours after the first examination was not made under anesthesia, and the condition was there as I reported. There is no doubt that the condition occurs without an anesthetic. The anesthetic is purely incidental in these cases and not causal.

As to whether the condition is brought about by shoving in the instrument, I do not believe that is the explanation, neither do I believe the explanation is due to the uterus being bulged out by the blood that is there. This is a rare condition, and a condition which is due to incoördination.

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I have not tried to settle the question in my own mind as to the pathology and etiology of it. I simply report this as a condition that does obtain, and one in which we should have the possibility in our minds, and whenever we think we have a perforation, more examination should be made than has been made in the past.

DR. VAN AMBER BROWN, Detroit.—Was there a marked anemia that antedated the pregnancy in any of your cases? That has been given as one of the causes of this dilatation.

DR. SCOTT.—I would not say that there were not any of them that had anemia. Some of them had no anemia and did not have bleeding sufficient to produce anemia, and some of them were young people. The dilatation occurred in good, healthy subjects, who were not anemic.

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CARCINOMA OCCURRING IN THE STUMP OF THE CERVIX, FOLLOWING SUPRAPUBIC HYSTERECTOMY.

BY

EDGAR A. VANDER VEER, M. D.,

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Albany, N. Y.

A RECENT case of carcinoma of the cervix following operation for the removal of a fibroid tumor of the uterus, led me to investigate this subject somewhat, in an endeavor to determine whether or not this is a common occurrence; and in the service of Dr. Albert Vander Veer and myself, at the Albany Hospital, I could find but two cases. However, a search of the literature shows this condition to occur more frequently than is generally acknowledged.

In this country two very excellent papers have been written: one by Dr. Andrew F. Currier, of Mount Vernon, N. Y., and published in the transactions of the American Gynecological Society for the year 1906, and the other by Dr. Veader Newton Leonard, of Baltimore, Md., and published in the *Annals of Surgery* for September, 1913. The latter gives a complete bibliography up to that time, and reports two cases occurring in the Gynecological Clinic of the Johns Hopkins Hospital. In all he found a total of somewhat less than sixty cases reported. A letter received by me from Dr. J. F. Baldwin, of Columbus, Ohio, reports five cases more. The letter from Dr. Baldwin is as follows:

"I notice in the preliminary program of the American Association, of Obstetricians and Gynecologists, that you are to have a paper on carcinoma occurring in the stump of the cervix, following a supravaginal hysterectomy. If your paper is a statistical one, it ought to be of great interest and value.

"A number of years ago I changed my teehnic from supravaginal- to pan-hysterectomy in practically all cases of women who had had children, or in whom there was anything but a perfectly healthy condition of the cervix. I was induced to do this because of having five cases of cancer of the cervix following the incomplete operation, in none of which had there been the slightest suspicion of malignant disease at the time of the operation.

"I do not suppose that the removal of the body of the womb predisposed the cervix to cancer, but had I not operated in these cases the cancer would have developed just the same. For a good many years, however, I have been making the complete removal as described in the paper which I presented at our Association in

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Indianapolis last September (1916), a reprint of which I will mail you, since perhaps you may be interested in nitrous oxid-oxygen and anoci-association as well, as in hysterectomies."

This letter of Dr. Baldwin is of great importance, as it forcibly impresses upon us the fact so well known to the general surgeon—grafting or exciting to action in diseased tissue or cicatrices not perhaps well healed, as seen in amputations following old military wounds, burns and other like conditions. It is interesting to notice his clearness of observation in his views in favor of panhysterectomy as applied to married women who, having had children, are so likely to be left with more or less traumatism of the outlet of the uterus. There can be no doubt that in following his conclusions we are doing our best for the patient.

The histories of our two cases, briefly, are as follows:

CASE I.—Mrs. G. M., aged forty-eight years, widow, housewife. Operation for removal of cervix, Nov. 12, 1915. Some ten years before was operated upon for a fibroid tumor of the uterus, the stump of the cervix being left in. Patient made a good recovery, did nicely for a year previous to the second operation, when vaginal discharge and hemorrhage commenced. Examination of the cervix showed some ulceration, and the pathological examination, made from scrapings of the cervix and portion of cervix removed, showed the condition to be carcinomatous. Cervix removed through the abdomen. Uneventful recovery. Patient has been absolutely well since.

I would say here that in doing a second abdominal operation for relief of pelvic trouble, which might be reached through the vagina, I take into consideration the original cicatrix, and if there be any point of weakness or ventral hernia, or marked symptoms of intestinal adhesions, then I am quite sure to go above through the old wound, though in this case no such complications presented; she had never been pregnant and the vagina was not dilated.

CASE II.—Mrs. T., aged forty-eight years, operated upon two years previously for fibroid tumor of the uterus. Uneventful recovery. In May, 1917, discovered a bloody and foul discharge from the vagina. Stump of the cervix found ulcerated and a granulating mass presented. Cervix removed through vagina. Uneventful recovery. Pathological report; "Chronic inflammatory condition, probably carcinomatous."

I should also like to report the following case, through the courtesy of Dr. Leonard Freeman, of Denver, Colorado, who saw it in consultation with Dr. William S. Bagot, whose letter follows:

"Saw Mrs. —, aged thirty-eight, with a history of fibroid of some duration. Operated upon Dec. 29, 1913; suprapubic hysterectomy.

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Tumor about the size of a five months' pregnancy. There were many adhesions, complicated with long-standing pus tubes. At the time of the operation cervix appeared healthy. After her return home, February, 1914, she continued to have some discharge from the cervix, and was treated over a considerable time by her family physician, with local applications to the cervix and the cervical canal; no marked benefit following.

May 15, 1917, she again came under my observation, suffering from a profuse discharge and pain in the lower abdomen, sacral region and down the thighs. An advanced carcinoma of the cervix, involving the left lateral fornix of the vagina and extending up into the base of the left broad ligament, presented, and diagnosis of epithelioma of the portio vaginalis was made. This was confirmed at consultation with Dr. Leonard Freeman, who advised the curettement and thorough cauterization of the cervix with the Paquelin cautery, cooking the tissues left as thoroughly as possible. Since then she has been treated with the *x*-rays. Patient's condition remained about the same. Some months previous to May, 1917, her physician had been making frequent applications of carbolic acid to the cervical canal. Whether or not this could have been a factor in the case it is hard to say.

This condition of carcinoma of the cervix seems to have been recognized in Europe for some time, and Currier was the first to call our attention to it in this country.

The subject condenses itself into this problem, whether the condition is present before operation and is not recognized, or whether it occurs as an entirely new pathological condition arising subsequent to the original operation. It is fair to assume that cases which present within a reasonable period after a suprapubic removal have had present the cell proliferation of malignancy. In the late cases, as No. 1, it would seem to be an entirely new growth.

It is a well-established fact that carcinoma occurs in myoma of the uterus, and is only discovered in the pathological laboratory, so that it would not be unusual if in a case of hysterectomy, where the tumor occurred near the cervix, and possibly extending into it a beginning carcinoma of the cervix, it should not be discovered and be left behind, later to manifest itself. Furthermore, our methods of diagnosis are now so complete, and our examination so thorough, that a carcinoma present, before operation, in the cervix or external os, would be likely to be recognized and removed at the first operation.

The question as to whether or not a complete hysterectomy should be performed in every case, because of this complication, is a debatable one and has advocates on both sides. But the

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opinion of the majority seems to be that the advantages of a hysterectomy, with the cervix left in, far outweighs the dangers of a complete hysterectomy, even with the possibility of a carcinoma developing in the stump. Consideration of the thousands and thousands of hysterectomies that have been performed, and the very few cases of carcinoma of the cervix that have been reported as following, develops the fact that the danger is almost *nil* and can practically be avoided by a careful examination and diagnosis before operation. And where it does follow, prompt recognition of the condition and removal of the cervix will result in a complete cure.

Whether at the second operation the abdomen should be opened again or the cervix removed *per vaginam*, is also a debatable point. It would seem that in those cases where the pathological condition is recognized early, and where the growth is strictly localized, that removal *per vaginam* is the best method to pursue, on account of its simplicity and reduced shock and danger to the patient. On the other hand, where the growth has extended beyond the cervix and involved the vaginal walls or the remnants of the broad ligament, operation from above should be considered.

In our service at the Albany Hospital, when doing a hysterectomy, whenever possible we leave the cervix, in order to preserve the vault and floor of the vagina. In the majority of cases we have opened the abdomen and performed the hysterectomy, not disturbing the cervix in any way. Possibly it might be well in certain cases, especially in married women who have borne children, to primarily operate upon the cervix and repair any lacerations which might be present, thus adopting such prophylactic measures as we can. On the other hand, in cases of severe lacerations, with more or less ulcerative processes presenting, and with the experience given us by such able operators as Baldwin and others, is it not the better method to do a complete panhysterectomy? With no lacerations, with no evidence of malignant involvement of the cervix, then the supravaginal procedure is the best. As we all know, carcinoma is bound to occur in a certain number of cases of laceration. As a rule, we must not forget that this repair of the cervix prolongs the shock of the operation and this precaution is not to be ignored.

Whether the condition occurs more frequently in married or unmarried women, statistics do not show. Myoma, occurring more frequently in unmarried women, might possibly point to the thought that it would occur more frequently in that class of cases. On the other hand, if, as it is generally considered, lacerated cervix pre-

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disposes to carcinoma of that organ, we would naturally infer that it would occur more frequently in women who had borne children.

It would seem that, in those cases where the disease appears within a few months after the original operation, the condition was present at the time of operation but was not recognized. Where the disease appears several years after operation, it is fair to assume that it is a distinct pathological condition. Primary carcinoma of the cervix, as shown by statistics, being much more prevalent than primary carcinoma of the body of the uterus, it is not to be wondered at that cancer of the cervix might be overlooked at an operation for myoma of the uterus.

A preliminary curettement for purposes of diagnosis is to be recommended in all cases where the diagnosis is at all uncertain. Where the report is nonmalignant, of course, further operative intervention is unnecessary. I am of the opinion that in all cases with a pathological condition present, no matter what, where a secondary operation is necessary, the less we do at that operation, within the limits of safety, the less the shock, the better it is for the patient, and the better our mortality rate. In a great percentage of our cases, I do not believe that our patients stand the secondary operation as well as the primary one.

CONCLUSIONS.

1. Carcinoma of the cervix does occur in a few cases following suprapubic hysterectomy. Because it does so, it is not a point in favor of a panhysterectomy exclusively.

2. The dangers of a panhysterectomy are greater than the risk of a carcinoma occurring secondarily in the cervical stump and being promptly treated.

3. A careful examination should be made of every cervix before the hysterectomy is performed, particularly in women who have borne children.

4. In every case of hysterectomy, the patient should be advised to report promptly if there is any appearance of a vaginal discharge, a curettement done, and a laboratory examination made.

5. Removal of the cervix *per vaginam* is certainly to be preferred to opening the abdomen in every case where the disease has not progressed too far, as well as in cases having any discharge.

6. All cases of this condition should be reported.

7. Routine pathological examination of the myomatous uterus at the time of operation should be done, and in this way unsuspected cases of carcinoma of the uterus, also of the cervix, will be discovered and the proper operation then performed.

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RECURRENCES AFTER "FIVE-YEAR PERIOD" IN CARCINOMA OF THE CERVIX.

BY

X. O. WERDER, M. D., F. A. C. S.,

Pittsburgh, Pa.

THE accurate and carefully prepared statistics of cancer operations which give us the end results of the radical treatment in the hands of various operators show with what care and oftentimes considerable labor many gynecologists follow up their operative cases during the first five years until they have reached what is generally considered their harbor of safety. That such careful surveillance and a complete report of the results obtained are of the greatest value and importance in the study of the treatment of cancer, is so evident that the gynecologist in command of considerable material would fail in his duty to neglect this rather onerous task. His interest in these cases, however, should not cease with the termination of the "five-year period," but should continue during the succeeding years, because literature records many cases of late recurrences, some of them many years past this period. The writer has reasons to believe that such late recurrences are considerably more frequent than has generally been supposed. The subsequent history of cancer cases, particularly those of the cervix, should, therefore, prove to be an interesting, as well as an instructive, study which has not received the attention it deserves.

According to Labhardt, the time of the appearance of these recurrences depends to a great extent on the organ in which the primary cancer neoplasm developed. He mentions the fact that in carcinoma of the breast late recurrences are considerably rarer than, for instance, in carcinoma of the rectum. Jordan reports a recurrence nineteen years after operation for carcinoma of the tongue. The cervix is apparently much more favorable for late recurrences than the corpus uteri. In Wertheim's clinic no recurrences after three years were observed after hysterectomy for cancer of the body of the uterus, while following the cervix operation they were comparatively frequent. Such late metastases have also been reported by Winter, Reinecke, Mackenrodt, Ries and others, occurring from five to eleven years after operation. Most of these reports, however, refer to cases

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operated upon by the older methods before the present more radical operations came into general use. Weibel(1) deserves the credit for having been the first one within recent years to carefully scrutinize the material of a large clinic, that of Wertheim, for late recurrences after the Wertheim operation, and the results of this investigation deserve a careful study.

He found in 185 cases which survived the operation at least five years, thirteen late recurrences, of which eleven occurred during the sixth and seventh, and two during the seventh and eighth year after operation; in at least eight of these, clinical as well as anatomical, evidences of cancer were found in the pelvis. Examinations of the glands removed at the operation showed them in nine cases to be free from cancer, and in four they were distinctly carcinomatous. This would seem to demonstrate the fact that, in spite of the presence of cancerous glands, patients may enjoy years of good health and freedom from all evidences of cancer.

In a paper read before the Third Clinical Congress of Surgeons in New York City in 1912 ("The Cautery in the Radical Treatment of Cancer of the Cervix"), the writer in giving the results of this operation, also referred to the subject of late recurrences which had occurred in his practice. Since then we have continued our efforts to keep in touch with all our cases, not only during the first five years after operation, but after that date up to the present year, and in many instances practically up to the present day. All the cases here reported have been operated upon for cancer of the cervix by the radical cautery operation or igni-extirpation as this procedure may be properly termed. The operation consists, briefly, in a rather high cervix amputation with the cautery knife at a dull red heat, which leaves a perfectly dry, charred wound cavity in the vagina.

The abdomen is then opened, and after tying off the infundibulopelvic and round ligaments, the lower uterine attachments, including broad and sacrouterine ligaments, are then thoroughly cooked between the blades of an electro-thermic clamp devised by Downes in which they have been grasped. No ligatures are needed after the removal of these clamps, as hemostasis is complete, and the tissues thus treated remain absolutely dry.

The writer during the last twelve years has performed this operation on eighty-seven cases of cancer of the cervix, with five deaths, or a mortality of 5.7 per cent. In fifty-nine cases the operation dates back five years or longer; of these twenty-seven have survived the five-year period or 45.76 per cent. Ten of these have died since then, two from an intercurrent disease, and eight from a recurrent

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carcinoma from five to nine years after operation. In only five cases was it possible to gain any knowledge of the exact location of this recurrence. They were:

Mrs. J. E. Operation, Sept. 18, 1906. Age at operation forty years. Recurrence at right upper quadrant in the form of mass, probably lumbar glands. Death, after five and one-half years.

Mrs. D. P. B. Operation, May, 1906. Age at operation forty-eight years. Symptoms began several months before her death, which were vomiting, with pains in epigastrium and the middle dorsal region. They continued up to the time of her death, six years after operation. No definite enlargement in these regions was palpable at any time. The diagnosis of the attending physician was carcinoma of retroperitoneal glands involving the spine.

Mrs. C. L. Operation, May, 1908. Aged forty-seven. Pain and enlargement noticeable in the left iliac fossa. Death, six years after operation.

Mrs. S. Operation, Oct. 25, 1905. Aged forty-nine years. Death, March, 1912, from carcinoma of the liver, six and one-half years after operation.

Mrs. G. N. L. Operation, Sept. 24, 1907. Aged fifty-seven years. Carcinoma of the left breast developed eight years after operation which was removed, but an early recurrence took place in the mediastinum according to the report of her physician. At no time was there a recurrence in the abdomen or pelvis. Death, nine years after operation.

In none of these cases, three of whom were examined personally by the writer, was there any evidence of a recurring neoplasm either in the vagina or pelvis. In four cases in which we have clinical data regarding the seat of the recurrence, both symptoms and physical signs pointed definitely to the glandular system as the location of the metastatic development, though in none of them was there an autopsy held to substantiate these clinical findings. They all can, I believe, be safely classified as late recurrences. In the fifth case, however, in which carcinoma of the breast developed and death occurred without any evidence of malignant disease in either abdomen or pelvis nine years after operation, an etiological connection between the two neoplasms seems more than doubtful, and we may look upon it, as, in all probability, a new and independent development, and not a recurrence.

A comparison between Wertheim's statistics and those of the cautery operation brings out some interesting features in this connection which merit closer attention. Jacobson(2) gives Wertheim's operative mortality in 714 cases as 16.6 per cent. and his cures as 42.5 per cent., while the writer has a mortality of 5.7

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per cent. with the cautery operation and five-year recoveries of 45.76 per cent., results which speak decidedly in favor of the cautery treatment.

When we review the cases after the fifth year of operation, however, that is, those which are ordinarily regarded as cured, conditions change in a very marked degree, for while Wertheim records only 7 per cent. of recurrences, the writer has 29 per cent. This remarkable difference in late recurrences following the two methods of radical treatment of cancer of the cervix has caused the writer much careful reflection. While no conclusive solution of the problem can be offered, an explanation will be attempted, which, at least, seems to be sufficiently plausible to deserve consideration. Assuming that practically all late recurrences, excepting the purely local ones which must be quite rare, are glandular in origin, it might be suggested that the extirpation of the regional glands in the Wertheim operation is responsible for the difference in the late results. When we consider, however, that in nine cases out of the thirteen late recurrences no glandular involvement was found at the time of operation, this argument, to say the least, is far from convincing. It seems much more reasonable to attribute the small number of late metastases to the same influences which account for the poorer results obtained in the hands of excellent and skilful surgeons, notably here in America, who, though doing a successful and thorough Wertheim operation, are unable to approach the number of cures obtained by Wertheim himself. To attribute this to a lack of skill or to a defective technic, would be absolutely unfair and unjust; the truth of the matter is that they are working with a different class of material in which the proportion of far advanced cases is much larger than ordinarily found in the large European clinics. It is, furthermore, a well-known fact that when the glands removed in the radical cancer operation are carcinomatous, the prognosis in regard to a permanent cure is very unfavorable as can be demonstrated by a study of Wertheim's own statistics. The regional glands removed at the operation are adjacent to the diseased organ and in proportion to the masses of lymphatic structures directly or indirectly connected with the uterus they are quite few in number. Is it not reasonable to suppose that some of these may have escaped metastases, while some of those more remote and not within the field of operation are involved and cancerous? These may remain quiescent under certain influences at present very little understood, possibly for many years, but sooner or later active development may take place in the form of a

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late recurrence. That would account for the recurrences in Wertheim's cases in which the glands were free from disease at the time of operation. This argument, then, would lead us to the conclusion that the more unfavorable the material we are dealing with at the operation, the more recurrences we must expect.

If the proportion of late recurrences is greater after igni-extirpation than after the other radical operations, or, in other words, if these metastases remain dormant for a longer period, would it not suggest the presence of some agent, probably produced during and by the action of the intense heat upon living tissues, which has a specific effect upon the cancer cells lodged in the lymph-channels?

If there is such a toxic product, be it chemical or in the form of toxines, it is evidently not absolutely destructive to the disease elements, but it seems to retard their development and render them innocuous for an indefinite period, thereby adding years to the patient's life and health.

In order to avoid recurrences, be they early or late, we must get our cases early, before the lymphatic system has become invaded by the cancer cells. The present radical operations are now fairly successful in removing the neoplasm as long as it is localized in the uterus and to a limited extent even in the parametria, but as yet we are practcally powerless to deal with carcinoma effectively when it has found its way into the lymphatic channels.

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DISCUSSION ON THE PAPERS OF DRS. VANDER VEER AND WERDER.

DR. J. HENRY CARSTENS, Detroit.—The paper of Dr. Vander Veer has interested me very much although I have been very fortunate never to have had a case of cancer of the cervix in any of my suprapubic hysterectomies. I had one patient who came back and had some discharge and irritation of the cervix. In this case I took the cervix out *per vaginam*, had it examined carefully, but there was nothing malignant about it. Nevertheless for a great many years I had thought of the possibility of cancer of the cervix, and when I find a woman who has a bad laceration of the cervix I do a panhysterectomy.

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As to fibroid tumors of the uterus, we may say that almost half of them occur in virgins, with absolutely no diseased condition of the cervix, and certainly there is no need at all of doing a panhysterectomy which, as Dr. Vander Veer says, makes the operation so much more dangerous. In the other cases we can do very often a combined operation, loosen the cervix, tie the uterine arteries from below and finish up the operation from above. Formerly certain operators did vaginal hysterectomy and following the practice of Segond and Richelieu, we did a great many operations for the removal of fibroid tumors by vaginal hysterectomy. This operation can be done easily if there are no complications and adhesions. We can do a morcellement of the uterus and thus avoiding the development of cancer. I do this very often.

So far as Dr. Werder's paper is concerned, as he said, we are never sure of recurrence. I want to call attention to one point he made. Schauta has investigated these cases thoroughly, and in one series of cases I think he had 10,000 sections made of the glands in the pelvis and the groin, and of the glands in sixty cases postmortem, and he reported quite a number of cases in which there was not a single lymphatic gland involved in cancer in the pelvis, but away up under the kidney or down back of the stomach there were one or two cancer cells found. His investigations show that we can have a cancer of the uterus without any involvement of the glands of the pelvis; but we may have secondary deposits away up near the kidney, the liver, or stomach, and this will lead to these late recurrences.

Dr. Edward A. Weiss, Pittsburgh.—The paper of Dr. Werder deserves very careful consideration. Those members who attended our meetings fifteen or twenty years ago, and who are familiar with the Transactions of the Association, will recall that Dr. Werder has always been one of the warmest advocates of the radical operation for cervical cancer. In 1898 he described the so-called combined operation for cancer of the cervix and presented his paper before this Society. Two years later, Wertheim published practically the same operation. When Wertheim's attention was called to this fact, he wrote Dr. Werder and acknowledged his priority for the operation, but in none of his subsequent writings has Wertheim given Dr. Werder credit.

Dr. Werder was not satisfied with the results of his operation because the mortality was high and the morbidity great, as is generally admitted, and about twelve years ago he began to perform what he now calls igni-extirpation, and the results were most remarkable as compared with those of the old operation, both so far as mortality is concerned and likewise morbidity.

It has been my pleasure to have been associated with him for the last seventeen years, and I am familiar with almost all of the cases on which he has operated, either during the operation or examining the patient subsequently. The difference in the two operations is most striking and decidedly in favor of the igni-extirpation.

In every one of these cases the diagnosis was positive even without the microscope. The macroscopic diagnosis was clear, and in addi-

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tion every one of the specimens was confirmed by microscopic section, not as we find in some clinics where cases are called cancer and put down in the records as such. The records of Dr. Werder are absolutely correct in every sense of the word. As to those of Wertheim, I doubt whether the truth has been told at all times. We should give very careful consideration to Dr. Werder's cases as he has reported them, and I think this operation should be called not the igni-extirpation, but rather the Werder operation.

DR. CONDIT, East Orange, N. J.—I have just come from a most interesting meeting of the American Electro-therapeutists and Radiologists, held in Atlantic City, in which this whole subject was very much talked about, also the methods of removal of cancer in different parts of the body. Many cases were reported, and it was clearly recognized that the thing to do was to remove the cancer first by surgery, if possible, and then before the wound has healed to apply the Röntgen ray for a certain period of time, and thereby hasten the cure or, at least, prevent metastases.

DR. WERDER (closing).—There is only a word or two I would say in regard to Dr. Vander Veer's paper. Until a few years ago I thought the danger of carcinoma of the cervix following suprapubic hysterectomy for fibroids exaggerated and not of sufficient importance to consider the advisability of the removal of the cervix as a routine procedure. During the last two or three years, however, I have seen four cases in which carcinoma of the cervix followed the removal of the uterus, in some cases, years after the operation. While I still do the suprapubic in spite of this experience, because I consider it a better and safer operation, I precede it by a thorough curetment and after the removal of the uterus, incise it and inspect its cavity thoroughly. In several of these cases I have seen carcinoma present in the uterus, when entirely unsuspected. While this does not do away with the possibility of cancer developing subsequently in the cervix, the preliminary curettement and careful inspection of the uterine cavity minimizes this very greatly.

I have very little to add to what I have said in my paper. I may say here, however, I do not take credit for the operation. It was largely based upon the experience of John Byrne of Brooklyn, who was among the first to do successfully a high amputation of the cervix for carcinoma, and his results excelled those of all his contemporaries using more radical procedures, such as vaginal hysterectomy.

Schroeder, whose clinics I attended many years ago often spoke of a case of a cautery amputation, in which he obtained a permanent cure, while as I recall it, all of his high amputations with the cold knife, subsequently succumbed to the disease. This impressed itself upon my mind, because he evidently attributed some special virtue to the cautery which the cold knife did not possess. It is my opinion, however, that amputation of the cervix by the cautery is not sufficient; to get the best results the whole organ should be removed by the cautery, a procedure which I have practised from the very beginning of my cautery work in carcinoma of the cervix.

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RADIUM; FURTHER CLINICAL OBSERVATIONS.

BY

DOUGLAS C. MORIARTA, PH. G., M. D., F. A. C. S.,

Saratoga Springs, New York.

I HAVE a very keen appreciation of the ability of my listeners, both to determine and to differentiate the value of clinical measures; nevertheless, I am before you to-day with essentially the same subject matter that I presented at our meeting a year ago, for I am sure that the unique action of radium is not generally appreciated.

Evidence accumulated in my work during the year has so strongly emphasized this fact, and so deeply impressed me with the miraculous power of this remedy for the alleviation of the many distressing symptoms associated with cancer, that I felt urged to speak of it again. Our minds do not seem to comprehend the results reported from the use of radium, even though they are from authorities ordinarily considered unquestionable.

It is, perhaps, no wonder that we are skeptical concerning the usefulness of this new therapeutic measure, for eminent men are at variance over it. Research workers have been quoted in the secular press as stating that radium is not a cancer cure; that it does not control metastases, and that sometimes it even stimulates the growth; while, on the other hand, clinical workers, men of equal skill, are continually reporting their successes. So it is not surprising that radium has been discredited by people generally, and that the sentiment prevails that the results obtained are accidental, and that radium is only an extravagant toy in the hands of a few enthusiasts.

Those who have worked with radium are usually enthusiastic; for the comfort and relief actually given in individual instances to the cancer victims, beggars description. I am not familiar with a single worker with radium who does not, somewhere in his reports, make the positive statement that radium controls pain, hemorrhage, discharge and odor, and produces a condition of comfort and hope in the hopeless cancer case.

Such men as Clark, Aiken, J. H. Miller, Kelly, Ransohoff and others, state emphatically that radium does what no other therapeutic measure has ever done for these cases. These statements are capable of demonstration, and when corroborated over and

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over again, make it certain that only time is required to have the value of radium conceded.

The dominant points in nearly every adverse discussion of radium are that the patient did not live five years after its use, and that metastases developed. Two pertinent factors are ignored: *First*, that in our hopeless, inoperable cases of cancer pain, odor and hemorrhage are relieved and the life of the patient made more endurable, if not prolonged. I venture to illustrate by reciting one case.

H. L., aged seventy, male, person of unusual sensitiveness, consulted me last December for dysentery. On inquiry, I found his chief distress was from the constant discharges from the anus of gas, fecal matter, pus and blood, so that he was obliged to wear a protective dressing and remain apart from his friends. On examination the entire circumference of the rectum, prostate and sphincters were found to be markedly indurated and functionless. Radium was applied, and in four weeks all the induration about the sphincter and the lower half of the rectum had disappeared, and the sphincters resumed their function. He died about four months later.

I mention this case simply to speak of the comfort and cheer afforded both the patient and his family. It may not seem, as you listen, much of an achievement; but if you had experienced the gratitude of the family, as I did, you would think such an alleviating measure worth while, particularly as it was free from pain, distress and danger. This is but one of several similar experiences.

The fact is often ignored that surgery, and all other known measures, are helpless to arrest the ravages of cancer when it has developed to the extent under discussion.

One might just as well refuse the victim of auricular fibrillation the benefit of digitalis, because the condition is not a curable one. That this demonstrated therapeutic knowledge of radium should be discredited to-day is on a par with the practice of those men who assure the women who consult them at the menopause for pain accompanied with uterine hemorrhage, that the condition is a transient one, and that they will be all right when the period has passed, and so send them on to destruction.

And usually these men do not trouble to make an examination. In this connection, I might say that Dr. Ernest V. Smith, formerly of the Mayo clinic, states that 65 per cent. of 100 cases of uterine cancer, which he reports, had consulted two or more physicians before he saw them and that no vaginal examination had been made.

There are two fields in which the value of radium does not admit of controversy; *First*, as an adjunct to surgery in those cases where

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all the growth is not, or cannot be, removed, and *second*, as a palliative in inoperable cases.

This second field suggested for the use of radium is the one I wish to emphasize particularly when the region attacked is the cervix uteri.

When *is* a case of cancer of the uterine cervix inoperable? To determine this correctly is the acme of skill and is of paramount importance to the patient. If the cancer cells are not disseminated beyond the probable surgical field, surgery is the choice of procedure. To differentiate carcinoma in its incipiency is not easy, authoritative statements to the contrary notwithstanding; and the only unfailing way is to examine the suspected tissues under the microscope. Such a procedure is open to criticism, for if a cancerous condition exists, we may stimulate its development, or even infect adjoining tissues, when excising the specimen for examination; and if it did not exist it would be putting our patient to unnecessary annoyance and discomfort. Yet I see no other positive way in diagnosticating doubtful cases. Unfortunately the beginning of these cases is insidious, and many times the patients do not come to the physician until the disease is well advanced.

What is the percentage of inoperable cases of cervical cancer as they occur in our practice?

For statistics in this particular, I quote from the report of Dr. John G. Clark, of Philadelphia. In an address before the American Radium Society last June, Dr. Clark stated that of all the cases of carcinoma of the uterine cervix which had come to the clinic of the University of Pennsylvania during the past three years, 90 per cent. were inoperable.

Now, what can be done for these cases? Surgery, *per se*, is helpless. Caustics are manifestly inadequate in advanced cases, carrying a prospect of functional disturbance and invalidism, together with a decidedly questionable prognosis. I fail to see how cancer cells, which have become broadly disseminated in collateral tissues of the pelvis, can be destroyed by caustics without enormous mutilation, with concomitant functional, and occasionally trophic, disturbances. And for this reason, if radium will reach these cancer cells, it must ultimately become the remedy of choice.

X-ray I cannot discuss from personal observation.

Radium is phenomenal in its action in many of these cases. Dr. Clark, already quoted, stated that 67 per cent. of the 90 per cent. of inoperable cases were materially helped by it, while 16 per cent. were clinically cured. My own experience, though of less extent,

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is practically the same. With a single exception, all of my patients have shown marked temporary benefit; and I might add that all the cases that have been referred to me were advanced hopeless ones. In the one case referred to, pain was not at all relieved.

Radium can also be of great value as a prophylactic adjunct to surgery, *x*-ray and caustics in these cases. It is easy of application, devoid of pain, does not mutilate, and from our present knowledge of the technic, free from danger.

It is unfortunate, after these experiences, that the therapeutic value of radium, used in conjunction with surgery or as a palliative measure, should be questioned or condemned in the slightest degree, or that the cancer victim should be denied its benefits, because the skeptic argues that metastasis (which has already occurred) is not relieved; or because the hopeless case does not live for five years.

The way in which radium acts on cancerous tissues is interesting. Maloine, of Paris states: "The radium rays, acting on neoplasms, cause a retardation of cell growth, a destruction of the cells, and in some malignant cells a change which leads to the cell becoming normal."

Henry Schmitz, of Chicago, has proven by pathological specimens from a large number of cases in his own clinic, as he reported at the meeting of the American Radium Society in June, 1917, that in cancer of the cervix uteri changes commence almost immediately after the radium has been applied; and that in a brief period the cancer cells have been generally destroyed. The changes consist in an immediate degeneration of the cancer cells, thereby causing a cessation of mitosis. This traumatic action is followed by a leukocytic and lymphocytic infiltration, resulting in connective-tissue formation.

Clinicians and physicists concede this action of the gamma rays to be possible only at a distance of from 3 to 5 cm. from the point of application, and say that beyond this distance the rays may stimulate the growth. I believe that either the individual infection, or peculiar resistance of the tissues, or both, may prove in the future to be a factor in this connection. To justify this conclusion, I will briefly report two cases.

Miss S., aged fifty-one, seen at the Saratoga Hospital through the courtesy of Dr. Humphrey. Present condition extremely emaciated, septic, bed-ridden, not able to walk or stand; complete procidentia. The uterus, 4 by 6 inches; the cervix everted so that it had the appearance of a large cauliflower 5 inches in diameter, with a very foul odor, practically making the ward unendurable for others. Radium element was applied four times at intervals of ten days.

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The entire condition cleared up as if by magic, the odor and discharge disappeared, and the growth melted away. The cervix assumed its original contour, though somewhat enlarged, and the body of the uterus diminished in size and receded to its normal position in the pelvis.

Mrs. L. D., West Indian negress, aged forty-six. Referred by Dr. Thompson, who gave the following history: First noticed mass in abdomen six years ago, it was accompanied with a clear mucous-like discharge and some pain. The tumor became continually larger, pain more severe, and discharge very offensive. When I first saw her, April 7, 1917, she was emaciated to the last degree and septic, with a fixed growth in the abdomen extending to the ensiform, laterally filling the entire abdomen. Vaginal examination showed all the pelvic tissues indurated and board-like, with a large rectovaginal fistula. She had a very profuse vaginal discharge, mixed with blood, the odor from which was so unbearable that we could not have her in the ward with other patients. Notwithstanding that she was in a semiconscious condition, I was anxious to try radium, and the staff acquiesced. Seventy-five milligrams of radium were applied, placing it tandem in a rubber tube, halfway into the rectum through the rectovaginal fistula. She remained in about the same condition for a week, at the end of which time she commenced to improve and became conscious. At the end of six weeks there was an improvement which was unmistakable and which has continued to the present time. The diagnosis was a fibroid undergoing malignant degeneration. On September 1st she came to the hospital for a treatment and actually walked from the conveyance to the elevator, and then from the elevator to the ward. The odor is practically gone, and the discharge has markedly diminished. The growth now seems about 4 inches in diameter in the region of the right ovary and uterus, and is movable. The induration is gone, except in the rectovaginal septum, about the fistula. The patient seems cheerful and happy and believes she is going to get well.

Thus, it would appear that the gamma rays were effective in the first case at a distance of 12 to 15 cm.; while in the second case the distance was about 30 cm. There was no cross-firing in either instance.

In closing, I am certain that the skeptical practitioner is only to be convinced of the action of radium as an alleviating measure, by personal observation. Yet, if we tell the story over and over again, the seed may occasionally fall on fertile ground, and some poor sufferer be given hope and comfort. I can think of no source from which such information might better come, or of no body of men more fitted to inspire confidence in a therapeutic measure of this sort, than our own Society, and I contend that we might well make such an effort.

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DISCUSSION.

DR. WILLIAM H. HUMISTON, Cleveland, Ohio.—I have had no personal experience with the use of radium in malignant disease, but I wish to report briefly a case. The patient was a woman, sixty-five years of age, from whom I removed a carcinoma of the breast. After making a cocain injection and taking out a piece of tissue for the pathologist, who reported carcinoma, I made a wide dissection, opened the axilla and cleaned out all the glands. She remained well for four years, then began to complain of difficulty in swallowing, and I referred her to Dr. Iglauer, a throat specialist in Cincinnati. He wrote me that there was a superficial gray deposit on the tonsil of which he was suspicious. He clipped off a little piece and found epithelioma. After the removal of the carcinoma of the breast she remained well for four years, as I have said. He wrote me that he had advised the removal of the tonsil and I immediately wired to the patient to submit to the operation. He removed the tonsil completely. As they were fearful that something might happen to the patient they wrote me in reference to submitting the patient to radium treatment after thorough removal of the tonsil. I told them I had had no experience with radium and referred the patient to Dr. Iglauer, enclosing the letter. Finally, the patient went to Baltimore. She had four applications of radium under so-called competent hands at the expense of $500. She returned home, and within a few months the glands of the neck began to enlarge, and she came to see me again at Cleveland. I referred her then to Dr. Bloodgood, of Johns Hopkins University, Baltimore. He wrote me that it was undoubtedly an extension of the malignant condition of the tonsil, although it was removed early, and advised radical operation. His operation was so extensive that he had to ligate the jugular vein, and as skilful a man as Dr. Bloodgood is it took him nearly four hours to do the operation. He removed everything in that region. He wrote me about the difficulties of the operation, how extensive it was, and so on. She survived the operation, began to get better, and then later returned for two more applications of radium to the other party at Baltimore. This operation seemed successful for a time, but the growth began to appear again and she lived about five months. Certainly this case was taken very early. Dr. Iglauer was very hopeful because only a superficial portion of the tonsil was involved in the epithelioma. She had the radium treatment in skilful hands and she had later an operation by Dr. Bloodgood. Dr. Bloodgood said he had used radium and discontinued its use except in the superficial cancerous conditions, and that after a long experience with it in the deep-seated cancerous conditions, it aggravated and, in his opinion, hastened the growths.

DR. THOMAS B. NOBLE, Indianapolis.—I have always been somewhat doubtful relative to the curability of carcinoma by *x*-ray, radium, or any occult measure. We are dealing with occultism when we are dealing with these things, and so to be convinced, I took in hand a series of these cases with a gentleman who has radium and

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who uses it and who makes claims for its use. There were two cases of carcinoma of the neck, such as those that have been described, one of carcinoma of the jaw, three of carcinoma of the upper abdomen, two of the pylorus, one of the gall-bladder in which we opened the abdomen and applied radium direct through tubes in the abdominal wall, two cases of carcinoma of the cervix, and one of the rectum. In none of these cases did we get any results. In two of these cases, especially the case of carcinoma of the neck, I believe that the process was hastened so that while we will have in our reports cases in which hemorrhage and pain and foul stench may be gotten rid of, I look upon these as ameliorations. *X*-ray and radium may have salutary benefits as adjunct measures in therapy, but cannot take the place in any sense of surgery.

DR. EDWARD J. ILL, Newark, N. J.—We have heard of two cases with bad results, and I would like to speak of one good result, which is about all the good I have seen from the use of radium. Two years ago last spring I operated on an old lady, seventy-five years of age, for carcinoma of the body of the uterus. During the operation the tissues tore. We infected the left broad ligament with cancerous tissue. In November she came back with a local carcinoma about 2 by 4 cm. in size, I sent her to Dr. Kelly, told him what had happened, and I thought to myself that if he could do anything with that sort of a case with radium it was worth while. He wrote me that he had placed 3400 milligrams of radium into the vagina and had left it in for fourteen hours. She returned to me in a month, and I must say there was not the slightest vestige of carcinoma in the vagina. She has remained well ever since.

DR. HUMISTON.—Was it an inflammatory mass?

DR. ILL.—No, it was carcinoma as shown by the microscope.

DR. BRANHAM.—Did you make a microscopic examination of the mass?

DR. ILL.—Yes, and so did Doctor Kelly.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—The use of the cautery, of radium, and of the *x*-ray in the treatment of cancer, has opened up a new and, apparently, great field full of hope and promise for the victims of malignant disease. If we fail to cure or to give relief to-day, it is because these remedies are not yet fully understood and are, therefore, not properly employed. Nor is the character of the cases in which these means are most effective at all clear or defined. The use of these remedies reminds me somewhat of the early use of the obstetric forceps. When Chamberlin tried to sell this instrument, as you may remember, in the various parts of the world, he met with considerable disappointment. At one time he tried to sell it in Paris, and when invited by Mauriceaux to demonstrate the usefulness of his instrument, he was given a case of very narrow and extremely contracted pelvis. Chamberlin failed to deliver the unfortunate patient, who died soon after he ceased his efforts. His forceps were denounced as worse than useless. What of the obstetric forceps to-day? Have we a more useful instrument when it is employed by one who knows how and when to use it?

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I have seen the effects of heat, of radium, and of the *x*-ray in cancer cases followed by decidedly beneficial results, and by an apparently absolute cure in a few instances. My views, as you see, are based entirely upon personal experiences. I am confident that there is great virtue in these three remedies, but we must learn how to use them.

When Kroenig and Gauss, of Freiburg, were over here a few years ago, I listened to both of them very attentively; and, while with them in Chicago I received a message to come home as soon as possible as there was a bad case of carcinoma uteri anxiously awaiting my return. The patient was of magnificent stature, well developed, and apparently in perfect health as far as her outward appearance indicated. An examination, however, revealed the fact that she was hopelessly lost with cancer of the uterus, which had its beginning in the cervix. The whole upper portion of the vagina was filled with a solid mass which extended considerably into the left parametrium. This mass was removed first with the cautery knife, and what remained was treated by the Percy method. The immediate effects in this case were remarkable. The patient suffered no pain after the first application of heat. The Percy method was applied six different times at intervals of ten, fifteen, twenty, and thirty days. After the last treatment nothing more could be seen or felt of the disease. Several weeks after dismissal she complained of an offensive discharge. As there was no visible or tangible evidence of a return of the cancer, I referred her to Dr. Ransohoff for radium treatment for nothing more could be accomplished with the cautery. She received about three or four applications of radium at intervals of a week. The odor promptly disappeared, and the discharge ceased completely. This patient was kept under observation for more than a year and a half. She took her annual trip to the South during the winter, and enjoyed life as much as she had done before. Unfortunately death overtook her at the end of eighteen months after the first operation. There was no recurrence of the disease, either *in loco*, or anywhere else. She died of paralysis due to some obscure lesion within the brain.

Permit me to cite a second case. Two years ago this month, I was called to Cynthiana, Kentucky, to operate on a woman about thirty-eight years of age. She had carcinoma in both breasts. The right gland was still movable. The left side was firmly fixed to the chest wall, had a large crater, and the entire axilla was deeply involved. Both breasts were removed. The right breast was easily taken away, and the wound healed by first intention. The removal of the left breast required an extensive excision of the area around the gland, exposure of the ribs, and the resection of an enormous mass of infiltrated axillary glands, necessitating the removal of both pectoralis major and minor muscles, and a 5-inch exposure of the axillary vessels and nerves.

This case seemed positively hopeless and promised very little or nothing at all. The wound on the left chest could not be approximated and healed very slowly. Eight weeks after the operation,

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she came to me with all the signs of a recurrence on the left side. The chest showed a large granulating surface, and the arm, from the shoulder down, was intensely swollen and painful. A thorough skin-graft healed the granulating surface very quickly. For the arm, surgery promised nothing. The only hope was the *x*-ray. It was not, in my opinion, a case for radium. To my great surprise, the application of the *x*-ray did wonders for this patient. The induration in the axilla and around the shoulder subsided, the pain ceased, and motion of the joint returned. She is well to this day. There is a woman in the audience at this moment who is well acquainted with this patient, and who can testify as to the truth of my statements.

DR. MORIARTA (closing).—The general practitioner or specialist will never learn the value of radium until he has had some personal observation of its effect. The type represented by the cases of Dr. Noble and Dr. Humiston are the most difficult to treat or do anything for; it is manifestly impossible to control such cancerous condition regardless of the means employed; and I do not think one should attempt to decide concerning the value of radium by the results in such cases. Weir Mitchell once said that he had discovered that it was difficult to cure incurable conditions, and so it is with radium in reference to this type of malignancy.

Those of you who are skeptical in regard to the value of radium should take the first opportunity to personally observe its effect. I have not the temerity to tell you all the things that I am constantly doing with it; it would be asking you to believe too much. My colleagues bring me moribund cases and say to me "if you can relieve this patient, there is something in radium." And when there is a positive betterment they think it is accidental. I do not believe anyone expects to cure these hopeless cases, though the results we are accomplishing in giving them comfort are unique.

I confined my paper entirely to the use of radium in hopeless cases, and feel I am justified from my result in giving them comfort and hope. Take the man with rectal cancer, whose case I reported; he was ostracized from his family, but by the means of radium he was given three months of comfort after his sphincters functionated again. If any of you should have a condition of carcinoma in your immediate family, do not refuse them the comfort from the use of radium because you do not believe in it.

Dr. Noble states that radium may ameliorate the terrible conditions from which these patients suffer. Is that not worth while? What can the surgeon do, after performing an operation, for these patients should there be a recurrence? Absolutely nothing. Invariably these patients become addicted to the use of opium in some form. With radium you will find there will be less occasion for morphia and while there may not be hope for a cure, you will certainly make them more comfortable.

There is something about the action of radium on cancerous tissue which is not uniform, and which I have been unable to fathom. Consequently the prognosis in individual cases is correspondingly uncertain.

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MIXED CELL TUMOR OF THE KIDNEY WEIGHING THREE POUNDS IN AN INFANT TEN MONTHS OLD.

BY

WM. EDGAR DARNALL, A. M., M. D., F. A. C. S.,

Atlantic City, N. J.

(With four illustrations.)

THE case herewith reported was referred to me with the following history. I. M. S., an anemic, girl baby of ten months. Her family history is negative, revealing no tuberculosis, malignancy, or kidney troubles. The child had a normal birth, but has always been delicate and, according to her mother, has had a bronchitis since birth. At six months of age the mother first noticed an enlargement of the right side of the baby's abdomen. This progressively increased in size until it filled almost the entire cavity. The pressure of the tumor mass upward was so great as to partially impede the heart action, and the child was unable to properly expand its lungs. An examination of the chest showed numerous mucous râles, which I ascribed to imperfect aeration since, as soon as the tumor was removed and she could take long breaths, they disappeared.

There was some doubt in our minds as to whether the tumor mass was an enlarged spleen or kidney. It was easily palpable and outlined without difficulty. The contents of the abdomen were pushed over to the right side by the tumor.

The blood analysis showed an anemia; red cells, 3,280,000; white cells, 11,600; hemoglobin; 58 per cent.; lymphocytes, 26 per cent.; large mononuclear, 1 per cent.; polymorphonuclears, 73 per cent.; transitionals, 1 per cent. Repeated examinations continued to show about the same relations and definitely excluded splenic disease. The *x*-ray examination was unsatisfactory and was of little value.

An attempt to get a functional test with phenolphthalein was unsatisfactory, because the patient was so restless that a catheter could not be kept in the bladder for the necessary time, and, like all small children, she could not hold her urine and frequently passed it. A catheterized specimen, however, showed an acid reaction, slightly flocculent sediment, large amount of albumin, no sugar. Microscopically, some triple phosphate crystals, epithelial cells, a few white blood cells, red blood cells, hyaline and granular casts.

The baby up to the day of the operation was breast fed by the mother, but in the usual unsystematic and desultory fashion, that is, whenever it cried. It was decided to operate on the left kidney.

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Up to this time we did not know whether we would find a polycystic kidney, a sarcoma, or some other form of tumor. Operation was done Dec. 29, 1916, through the usual curved incision. The tumor was of such size that the incision was extended down over the abdomen to a point opposite the crest of the ilium. Ether was administered very carefully, but as the tumor was lifted from its bed there was a decided collapse, which necessitated stimulation. The tumor, however, was quickly removed, taking in all about

FIG. 1.

twelve minutes. There was almost no hemorrhage. Especial care was given to hemostasis, since we know that young children stand hemorrhage very badly, and many of the unfortunate results of surgery in the very young are due to the loss of blood. Although the operation was a clean one, a small cigarette drain was placed in the wound on account of the large cavity left, so that the serous oozing from it would drain away.

There was a sharp rise of temperature to 104° F. the day after the operation. This quickly came down to normal in about thirty-six

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hours, and the temperature and pulse pursued a normal course from then on till she was well. The other kidney functionated well. The patient was given a milk formula and her feeding carefully watched. She began to improve in appearance and strength. The râles in her lungs cleared up and she made a smooth recovery, leaving the hospital in excellent condition. About three and one-half

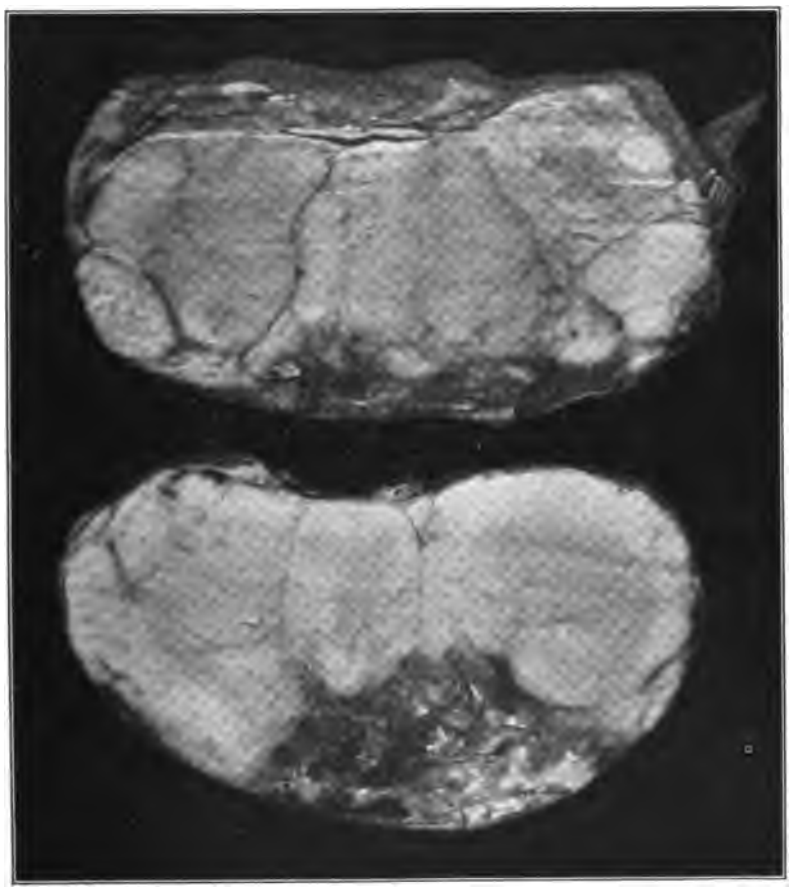

FIG. 2.

months afterward, however, she died, having all the clinical manifestations of recurrent sarcoma, although no autopsy could be obtained.

The report of the pathologist, Dr. H. T. Harvey, is as follows:

Specimen.—Left kidney with two tumor masses attached. It consists of a large mass of tissue resembling a kidney. There is a

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small mass adhering to it which breaks down easily and has the appearance macroscopically of carcinoma. The larger mass measures 15 × 8 centimeters; the smaller 5 × 5 × 4. The entire mass weighs 1120 grams or about 2¾ pounds. The large mass is covered with a capsule which is firmly adherent. It is reddish white in color, and one section reveals a soft white mass at the upper portion of the specimen. The white mass cuts with slight resistance and has a slightly granular surface. The smaller mass is very hard and firm. It is white in color and cuts with marked resistance, but

FIG. 3.

the inner portion is quite soft and flabby. Microscopically only a small amount of renal tissue is seen. The greater part of the tissue is composed of cells resembling those seen in the adrenal gland (spongiocytes). The section is quite vascular. Diagnosis. Hypernephroma.

Dr. Joseph C. Bloodgood, of Baltimore, who was present when the tumor was exhibited, was so much interested in it that he asked to study its pathology. I accordingly sent it to him, and am much gratified to be able to append his valued report as follows:

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Microscopic Study: Section I.—Tumor and capsule from homogeneous opaque granular area. Capsule shows in the first place, kidney tissue, a zone of eosin fibrous tissue, and then the tumor. The kidney tissue shows nothing abnormal except compression. The tumor is composed of many different types. In the first place, there are sections of cells which suggest tubules of glands. Around these cells there are loose tumor cells somewhat of the type of lymphosarcoma, and then these masses of cells are rather indefinitely separated by small spindle cells. We have, therefore, the appearance of a tumor containing remains of granular tissue which has become malignant. Apparently some of these spindle cells separating to tubules and the cellular areas are smooth muscle. The tumor cells about the section of the tubules resemble in their morphology sarcoma rather than carcinoma.

FIG. 4.

Section II.—Hemorrhagic Area. In this section the majority of the tissue takes only the eosin stain without cells, but we see a zone of this hemorrhage tissue composed of the capsule of the tumor, with no kidney substance, and beneath this a narrow zone of tumor tissue. The sections of tubules here show slight distention and appear as small epithelial-lined cysts. About these tubules we see many spindle cells resembling smooth muscle, and some of the very cellular areas resembling sarcoma, as in the previous section.

Section III.—Is from small separate tumor which in the gross looked more like a myoma. This tumor is composed of longitudinal and cross-section of smooth muscle, separated in places by an unsustaining intermuscular substance, but here and there we can see the beginning of cellular areas like sarcoma, but in this tumor we see no tubules.

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Section IV.—From portion that suggested remains of kidney. This is more or less normal, but slightly compressed kidney tissue.

The impression that I get is that we have originally here a congenital tumor of the kidney, a leiomyoma which has become sarcoma. In remains of tubules in the tumor the tissue may be congenital remains of one of the embryonic kidneys, or may be remains of the normal adult kidney infiltrated by tumor.

I cannot make out any fully developed striated muscle; all seems to be smooth muscle.

These tumors are considered malignant, but may be benign. Whether they are to be classed with carcinomas or sarcomas, seems to be a question pathologists have never definitely decided.

Metastases are late but eventually occur. The adrenal tumor may arise from adrenal rests in ectopic portions of kidney, ovary, testicle, liver, mesentery, lungs or bones.

A review of the current literature of the reports of tumors similar to this one shows a hopeless failure to arrive at any adequate classification. Until the etiology is more definitely known, no classification will be satisfactory. As a matter of fact, these tumors are always made up of "mixed" cells. Each pathologist seemes to have named the type of tumor according to the tissue cells he may have observed in the microscopic examination. The same pathologist will no doubt find many varying types of cells in different portions of the same tumor, and it is therefore necessary to examine every part of the tumor or some of its elements will be overlooked. The term hypernephroma has, for convenience sake, been applied to them, but hypernephroma may mean almost anything that is a kidney tumor.

In a careful study by A. C. Wood(1) the literature and pathology have been reviewed, and I shall take the liberty of quoting freely from that article which presents the matter in concise form.

"Accessory adrenals composed of cortical tissue may occur in the adrenal tissue or its capsule, or even in the kidney. When these hypertrophy, an adenomatous type of growth results. These tumors show the typical cortical tissue with columns of cells in a meshwork of capillaries. They may occasionally reach large proportions. On the other hand, there are tumors which in certain parts resemble the preceding, while in other parts are cells of smaller size, less deeply stained, and containing less fat, with transitions from adenoma to sarcoma, and even with the presence of definite sarcomatous tissue. The metastases are clearly sarcoma. These tumors have been called homotopic hypernephroma in contra-

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distinction to the Grawitzian type, which is heterotopic hypernephroma. There is at this time no agreement of opinion in regard to the real nature of these tumors. For instance, some may arise in the kidney cortex, quite independently of any adrenal displacement, hence a true nephroma. The cortex of the kidney and that of the adrenal are closely related embryologically, so that tumors of these structures might be expected to possess closely related connections. These tumors are usually vascular. The cells are in close contact with the capillaries. They are prone to hemorrhage. Metastases by the blood current are common, and the tumor tends to grow along the veins to the vena cava."

In 1894, Birch-Hirschfeld pointed out that the infantile tumors of the kidney are identical in character and origin, and differ only in the proportions of the various elements present, of which two are especially typical (glandular tubes and undifferentiated embryonal cells). He called attention to the resemblance of these tumors to the early Wolffian body, and concluded that they originate in rests of this structure, which have become included in the kidney during its development, just as a portion of suprarenal gland may become displaced. He proposed the name "embryonal adenosarcoma."

Maas held the opinion that these tumors develop from rests of the early fetal kidney, on account of the similarity of their structure to this body. Wilms advanced the theory that these tumors are a development from common mother cells of myxoma-like tissue, which, he believed, represent mesodermal cells in a very early stage of the embryo. These would normally later develop into pronephron and myotome. When, from some cause, these cells lose their normal connections, they remain for a certain length of time as so-called rests, and subsequently take on rapid growth, producing a tumor composed of the various types of tissues which would have formed if they had maintained their normal relations. At the stage indicated, all the elements found in these tumors are in close proximity, and the various degrees of displacement of portions of these elements account for the variations observed in the tumors. It thus happens that some of the cells develop along the lines of the Wolffian body, while others form muscle, cartilage, bone, etc.

Adami and McCrae explain certain forms of these tumors as follows: "The distal collecting portion of the renal tubules are derived from the Wolffian duct and the glomerular epithelium and main part of the tubule from the mesenchyme. As the primitive kidney is intimately associated with the Wolffian duct, tumors arising in these structures also involve the germinal mesothelium.

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It follows, therefore, that while pure adenomas are met with which show no evidences of reversion, various transitional tumors occur which in parts show the structure of adenoma and in other parts of sarcoma. In other areas one passes insensibly into the other."

Clinically, Wood thinks that the suggestion of Bendell that these renal growths occurring in infants be called "mixed tumors of embryonal origin" is, in the light of our present knowledge, satisfactory.

While etomologists may differ as to the origin and pathologists as to the classification of these tumors, they all clinically run a similar course, namely, they occur early in life, they grow rapidly without causing pain until late, and they invariably end fatally unless relieved by operation."

The immediate mortality is high, but with improved technic it is being lowered. Recurrences are said to take place in from 70 to 80 per cent. of the cases.

Early diagnosis and operation are the only hope of saving more of these cases. A large percentage of them develop metastases and die. Some, however, have remained well after the removal of the tumor. More favorable results might be obtained, no doubt, if the cases could be discovered and operated upon earlier.

REFERENCE.

1. A. C. Wood. *International Clinics*, vol. iii, series 26.

1704 PACIFIC AVENUE.

DISCUSSION.

DR. JAMES E. DAVIS, Detroit.—The stigmata of arrested development are from a pathological standpoint very much neglected, and if we had more thorough pathological examinations of postmortem material, I am sure more such cases, or more cases especially of this type, would be discovered. It is not an uncommon thing to find either in the genitourinary or the genital, especially in the kidney, embryonal rests which may for some unknown reason remain for years and years and do no harm whatever, but all at once some condition in the metabolism causes these rests to grow very rapidly, and I am sure that pathologists have found a considerable number of these cases in very young children.

It is indeed very interesting to hear a case discussed so thoroughly from a pathological standpoint, as this one of Dr. Darnall's.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—During four and one-half decades engaged in the practice of medicine, I have observed with interest the various hypotheses that were presented from time to time, with reference to the origin of malignant growths

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in the different structures of the human body. While Dr. Darnall was reading his paper, I was vividly reminded of one of the "old" speculative theories which, at this time, is more or less abandoned, namely, that all cancers are really of embryonal character and origin.

We know that in embryo the body is formed of three distinct layers—the ectoderm, the hypoderm, and the mesoderm. Out of these three layers, each consisting of different cells, are formed the various structures of the body. The outer layer forms the skin, the central nervous system, and all the organs of special senses; the mesoderm builds up the skeleton, the muscles, the glands, and the blood-vessels of the body; while the hypoderm produces all of the mucous membranes. In the building-up process of the magnificent structure of the human body, a so-called induplication of cells occasionally takes place. The embryonic cells, thus rolled up and folded in, are virtually shut off from the rest; they become dormant, as it were; but they are in reality buried and remain inactive and inert for years, and sometimes forever. But in not a few instances, as the result of an accident, a fall, a blow, or constant irritation, they are awakened, become active, and multiply anew and destructively. The result is a malignant growth. If it occurs in the skin or in the mucous membrane, we have an epithelioma; if it occurs in the muscle, it is called a sarcoma; if in the bone, an osteoma, and so on. The description of the case given by Dr. Bloodgood as quoted by the essayist, is really confirmatory of this theory advanced years ago.

Dr. Gordon K. Dickinson, Jersey City, N. J.—Perhaps I ought not to take part in this discussion, but Dr. Zinke's remarks take me back to what he said a little while ago about the Chamberlin forceps, the treatment of carcinoma, and the pathology of carcinoma. Are we not at the portals looking vaguely in? Is cancer produced by irritation? Dr. Carstens very forcibly brought out a year or two ago at a meeting the fact that we have many severe continued irritations that do not produce carcinoma. Theories are proven; hypotheses are speculations. The theory of Cohnheim that it is an arrest of embryonal cells appeals strongly to me, consequently it may be in the near future *one* of the truths which will be proven to be the cause of some kinds of cancer. Irritation, traumatism, may enter the field for another type of carcinoma and likewise the chemical factor.

Some time ago a Philadelphia doctor met a man over in Scotland, whose name, I think, was Ross. He brought him to Philadelphia and published his investigations. I have his book; I read it, but I do not see much of it quoted. In it he seems to prove or bring out the fact that the death of the tissue is the stimulus for the new formation of tissue. Thus when a person is wounded a process takes place which we call healing, which does not take place when there is no wound because the superficial death liberates xanthine-like substances, which brings about through chemotaxis the process of vascularization. That is just one stage toward cancer. The microscopists tell us that one of the very first things that happens in an early cancer is the liquefaction of the substance between the cells

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and their liberation, and they are allowed to work wildly. It is a chemical effect. May we not in the cancer matter, as to pathology be stepping ahead a little? We have no right as yet to have a theory; it is all hypothetical, and there may be several types of carcinoma in the future.

DR. DARNALL (closing).—I have nothing more to add except this, that these tumors which have heretofore been known as hypernephroma, or what I have chosen to call a mixed-cell tumor, when found in older persons, mature adults, seem to take more or less the form of carcinoma in contradistinction to the tumors in children, which nearly always take the form of sarcoma.

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THE END RESULTS OF THE TREATMENT OF INOPERABLE UTERINE CANCER BY HEAT.

BY

JAMES F. PERCY, M. D.,

Galesburg, Illinois.

In women with good kidneys and at least a fair heart, who suffer from inoperable uterine carcinoma, the moderate heat technic can be safely applied in 95 per cent. of the cases. What we can hope to accomplish with the treatment can be summarized under three main divisions. The first includes the arrest of offensive discharge, the checking of hemorrhage, inhibiting septic absorption with consequent disappearance of the cachexia, interrupting the persistent pelvic ache, improving the nutrition and morale of the patient for as yet an unknown average of months, and permitting the approach of death, if it must come from uterine cancer, without brutality.

The second great division comprises 35 per cent. of the cases of inoperable uterine carcinoma. These are the cases in which complete postmortem examinations, checked up by careful microscopic study, show no metastasis outside of the pelvis; the patients dying unoperated. It is in this class of cases that the heat technic, when applied in an experienced way, will produce its best results. Also, it is in this 35 per cent. class that many of the favorable surprises, following the use of heat, will occur. It is here that the borderland inoperable case can be returned to the safely operable class by the use of heat.

The third great division is based on my own statistics of ten women out of sixty-five in whom I have applied the heat, and who are well and clinically free from cancer from two to nine years following the treatment (15$\frac{5}{13}$ per cent.). Practically all of these cases, as far as I have records, were in the second division mentioned above. Attention is called to the fact that the abdomen was not opened for

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the application of heat in my early cases and the extent, therefore, of abdominal or pelvic gland involvement was not determined.[1]

Before the present-day heat technic was evolved, surgeons of necessity recognized but two types of uterine carcinoma: the operable and inoperable. The basis of the decision upon the part of the surgeon as to which class a given case belonged depended on a number of factors, the chief of which were his experience, skill and courage as an operator.

The heat technic, as shown above, has made it possible to add greatly to the number of advanced cases that are legitimately operable by the knife after the application of the heat.

I trust, however, that I may not be understood as advocating the use of the knife in any form of cancer treatment. What I have said above refers merely to the fact that if the knife is to be used at all, the gross mass of cancer should first be destroyed, as far as possible, by the heat. Futhermore, if the heat has not been made to reach the outermost confines of the disease and the normal resistance of the patient, whatever this may be, does not take care of what has not been destroyed by the heat, the knife will not prevent a recrudescence of the cancer except in the rare chance where the blade has encircled the disease at its outermost limits. The time has come for surgeons to recognize as a real fact that when they use a knife, unfortified with heat, on a patient suffering from uterine or any other form of cancer, they invite autoreinfection of that patient.

The mystery of the varying vulnerability of the cancer cell to different forms of treatment that have been advocated for its destruction is still a remarkably insistent fact. Every method of treatment so far advanced, as developed by its originators, has cures to its credit. This can be said of the arsenic paste of Marsden in surface cancer; of the treatment of cervical cancer by the application of acetone, according to the method of Gellhorn; the high amputation of the carcinomatous cervix with the electrocautery by the technic of Byrne; the use of the red-hot soldering iron in the same condition by A. J. Ochsner; the deep penetration method by the *x*-ray and the Coolidge tube as advocated, especially in this country, by Pfahler; the use of radium favored by many brilliant advocates of its claims almost to the exclusion of every other form of treatment. The various methods that have grown out of the highly scientific development of the electric current also cannot be ignored here,

[1] Opening the abdomen for the application of heat was first done by me in the case of Mrs. W., August 2, 1912.

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when the question of a practical cure in the uterine and other forms of carcinoma is before us for consideration.[1] The difficulty that confronts the surgeon is to know what method to choose for the treatment of *his* case of carcinoma, not that cases have not gotten what we have a right to consider a cure from one or all of the various methods that have been advocated. That cases of cancer have been cured by every one of the methods mentioned above admits of no doubt; but so far no one has been able to tell us the rationale of the cure. Clinically, we must be convinced that there are high and low degrees of virulence in the cancer cell and by the same token we know that, clinically, we have no method of determining, in a given case, the degree of that virulence. An apparently first-stage case and from the view point of our usual experience, one in every way favorable for the successful employment of the recognized surgery of to-day, will not infrequently be stimulated into new and tremendous activity by the treatment; while an apparently much more active and advanced case of the disease will occasionally clear up under any one of the recognized methods of treatment in a most surprising and inexplicable way. There are evidently grades of the disease and for them, it would seem, corresponding grades of treatment must be found. Only in this way can an explanation be given of a case that was first treated by the *x*-ray and temporarily improved; then later by radium, with improvement; and then abandoned as hopeless; and finally subjected to the low-heat technic two and a half years after the first vaginal bleeding. The result has been that fourteen months after the primary application of the heat this woman "appears in splendid health and has been able to resume her social duties."

The beneficent hope that impels us all when looking for the most efficient treatment for uterine cancer must include that which will give us some clinical insight into the character of the cell producing the symptoms. J. Walter Vaughan, of Detroit, in a paper(1) read before the Gynecological Section of the A. M. A. in June, of this year, gives us a hopeful and stimulating review of the blood picture in carcinoma. Work of this character has in it the promise that finally we shall have a reasonably accurate method by which we can determine in the laboratory and before operation, the probable degree of malignancy that the patient possesses. The results in

[1] In my paper published in the *Journal of the A. M. A.*, May 23, 1914, lxii, pp. 1631–1634, I give more in detail an enumeration of the many methods which have been favored by physicians and surgeons in the treatment of cancer.

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the treatment of pelvic cancer in women, by the application of heat, depend in large measure on the accessibility of the disease to the application of the heat, and upon the knowledge, on the part of the surgeon, of how far and how thoroughly he can go in its use. Heat will kill anything if applied long enough and thoroughly enough and cancer is no exception to this rule. This statement, simple as it is, covers the governing principle as it relates to the heat technic in cancer, published in my first paper on this subject in 1912(2). The critics of the treatment of uterine cancer by heat seem to forget that its use was first suggested only in the inoperable forms of uterine cancer. Increasing experience on the part of surgeons has made it seem rational to make use of it at least as a preliminary treatment in all stages of the disease, wherever located. This is especially emphasized by Balfour(3) of the Mayo Clinic.

The end results, as far as my personal experience goes with the use of heat in uterine cancer, are based on sixty-five cases. Thirteen of these will be found reported in my first paper, already referred to.[1] Two of this first series (15 5/13 per cent.) are apparently perfectly well at this time. Fifty-two additional cases make up the total of my cases up to two years ago. Of these, eight are alive and, as far as can be determined, well, and also free from cancer. The same percentage, as in my first thirteen cases, holds also in this second series of fifty-two cases; viz., 15 5/13 per cent. In none of my first thirteen cases was the abdomen opened. I added this feature to the operation after I realized by a process of slow appreciation, the possibilities in a more thorough application of the heat. This was especially true as one of my first patients (Mrs. F. H. F.), after the application of the heat, continued to remain free from what was in the beginning an utterly inoperable uterine cancer. The first patient in whom I opened the abdomen was Mrs. E. H. W., August 2, 1912, five years and five months ago. These two cases were in the utterly hopeless class as far as the ordinary panhysterectomy or Ries-Wertheim technic was concerned and this is true of the total of ten women who are alive and apparently cured after from nine years and three months in the oldest case to two years plus in the most recent ones.

In the table that I have arranged, a brief reference to the findings in each case at the time of operation will be found. The writer realizes fully the futility of reports of cures in cancer from any treatment based on a small number of cases and with a compara-

[1] *Journal of the A. M. A.*, May 23, 1914, lxii, pp. 1631–1634.

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tively short period since the application of the treatment in the larger number of the cases here reported.

This statement applies alike, especially at this time, to the results in the treatment of cancer by the *x*-ray, radium and to the heat technic. All of these methods are, so to speak, living in glass houses. But to condemn any of them, on the basis of their failures, is most unfortunate in the interests of scientific progress. The question in the treatment of cervical cancer by any of the three methods just mentioned is not how many are cured. The question, as I see it, is are any of them cured? At the present time it is much more important to know how the cures are obtained in the few cases, than to record not only the failures, but also the disagreeable sequelæ; and on these alone condemn the treatment. We know that without treatment they all die. If some of them live and are apparently cured, this is important and worth investigating with the open mind of the scientific investigator.

From the standpoint of the results here recorded from the heat technic in ten cases apparently cured out of a total of sixty-five, the subject can not but gain new interest for surgeons. In none of the ten was any additional treatment used except in the stout woman who was given sufficient of the so-called thyroid extract to produce a mild form of hyperthyroidism.

The following table gives a brief résumé of the condition of these ten patients at the time of the operation, and the results of their operation to date. The remaining tables are self-explanatory.

LIST OF PATIENTS ALIVE AND CLINICALLY CURED.

The numerals opposite each name give the clue (to be found in the footnote*) describing the conditions at operation.

Mrs. F. H. F.....	15–12–9–7–4–39–8–21–19–17–16–41–42–27.	Lived 9 yrs., 3 mos.
Mrs. A. G. H....	15–21–19–27–11–41–17.	Lived 6 yrs., 7 mos.
Mrs. E. W. W....	14–21–19–8–7–13–26–43–42–41–27–17.	Lived 5 yrs., 4 mos.
Mrs. J. M.....	14–21–41–42–33–7–21–27–17.	Lived 4 yrs., 10 mos.
Mrs. D. C. McD.	15–11–16–17–21–27–41–22–18.	Lived 3 yrs., 3 mos.
Mrs. J. W. D....	14–11–9–7–4–16–17–41–22–18.	Lived 3 yrs., 2 mos.
Mrs. Rebecca L..	14–20–22–18–16–17–7–9–11–41.	Lived 2 yrs., 9 mos.
Mrs. Maud McC..	14–45–32–22–21–18–7–9–4–12–41.	Lived 2 yrs., 9 mos.
Mrs. Alvin R. H..	14–20–22–18–17–4–7–11.	Lived 2 yrs., 7 mos.
Mrs. J. L. D.....	1–14–20–18–16–41–46–7–9–12.	Lived 2 yrs., 5 mos.

* Key to numerals opposite the name of each patient and which describes their conditions.

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1. Previously operated in another clinic.
2. Excessive use of morphine.
3. Vesicovaginal fistula from cancer before heat technic employed.
4. Vesicovaginal fistula produced by heat.
5. Pyonephritis before operation.
7. Cachexia present.
8. Palliative operation.
9. Bladder involved.
10. Rectum involved.
11. Pelvic contents movable.
12. Pelvic contents slightly movable.
13. Pelvic contents fixed.
14. Abdomen opened.
15. Abdomen not opened.
16. Vagina involved.
17. Cervix and one, or both, broad ligaments involved.
18. Type—infiltrating.
19. Type—vegetative.
20. Iliac arteries tied.
21. Iliac arteries not tied.
22. Vesicovaginal fistula closed successfully.
23. Vesicovaginal fistula closed unsuccessfully.
24. Nephrectomy for ureteral fistula.
25. Suffering from diabetes.
26. Recauterized.
27. High heat.
28. Died from hemorrhage.
29. Still alive, but not recovering.
30. Left inguinal colostomy.
31. Died from uremia.
32. Gall-stones.
33. Uterus sloughed out.
34. Septic infection.
35. Rectovaginal fistula.
36. Cause of death unknown.
37. Cancer of pylorus.
38. Abdomen opened with cautery because of recurrence in abdominal scar.
39. Closed spontaneously.
40. Followed by hysterectomy in five months, because of suspicion that a recurrence was developing in posterior lip of stump that was left.
41. Excessive hemorrhage and foul discharge.
42. Great loss of weight.
43. Hysterectomy with cautery knife because of recurrence in body of uterus (2 yrs., 2 mos.).
44. Involvement left labia minora, marked leukoplakia involving entire vulva.
45. Enormous omental umbilical hernia containing most of transverse colon.
46. Resection of ileum adherent to cervical stump from former operation.

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LIST OF PATIENTS WHO LIVED LESS THAN ONE YEAR.

Mrs. W. H. B...	14-28-21-7-8-9-16-13-18-17.	Lived 3 days.
Mrs. O. L. N....	14-13-27-26-5-7-9-17.	Lived 6 mos.
Mrs. J. J. D....	1-13-9-30-27-21-26-5-7-10-8.	Lived 5 mos.
Mrs. Wm. J	14-13-9-10-8-7-31-32-33-27-16-17.	Lived 2 mos.
Mrs. C. H. T ...	14-13-12-9-10-8-7-16-17-5-21-27.	Lived 3 hrs.
Mrs. P. J. B	14-3-5-8-9-10-13-16-17-31-7.	Lived 2 mos.
Mrs. Fred F....	14-21-9-10-8-5-3-7-13-18.	Lived 6 days.
Mrs. Augusta R .	14-21-34-2-5-18.	Lived 1 mo.
Mrs. E. E. C....	15-13-7-9-10-16-17-18.	Lived 40 days
Mrs. J. E. S....	15-7-8-9-10-16-12-17-21-26-27.	Lived 6 mos.
Mrs. Christine S.	14-8-9-10-12-7-34-16-17-18-21-27.	Lived 5 mos.
Mrs. A. J. K....	1-14-13-8-9-10-7-18-21-3-16-17-18-21.	Lived 1 mo.
Mrs. A. H. K...	14-4-7-8-9-10-12-16-17-18-20-23-5.	Lived 6 mos.
Mrs. Wm. T. B..	14-5-21-18-16-17-26-22-12-9-10-7-8.	Lived 10 mos., 5 days.
Mrs. John B....	14-7-8-13-9-10-19-16-17-21-27-31-6.	Lived 38 days.
Mrs. Franklin H.	15-7-8-9-10-16-17-18-21.	Lived 3 mos.
Mrs. E. J. H....	1-35-8-9-10-13-21-16-17-18.	Lived 6 mos.
Mrs. O. B. B....	14-20-13-36-7-8.	Lived 24 hrs.
Mrs. G. L. C....	15-16-17-18-21-27-12-7-8.	Lived 8 mos.
Miss Emma G..	14-7-18-21-16-17-26-28.	Lived 4 mos.
Mrs. Chas. B...	1-7-8-34-5-13-14-21-18-16-17.	Lived 24 hrs.
Mrs. J. P. B....	14-16-17-18-37-13-28-8-9-10-26.	Lived 6 mos.
Mrs. Carrie S...	1-7-8-9-10-13-14-21-18-16-17-5.	Lived 4 mos.
Mrs. Edward W.	14-21-34-18-16-17-26-8-13.	Lived 8 mos.
Mrs. Chas. A. R.	14-7-21-9-10-12-18-16-17-8.	Lived 4 mos.
Mrs. G. W. W...	15-16-17-18-21-26-27-7-8.	Lived 7 mos.
Miss Jennie S...	1-14-8-7-5-16-17-18-21-9-10-13.	Lived 2 mos.
Mrs. O. M. T....	14-8-3-7-9-10-13-21-16-17-18-26-27.	Lived 9 mos.
Mrs. Sarah L....	14-13-3-5-18-26-16-17-27-7-8-9-10-21.	Lived 1 mo.
Mrs. Celia H....	14-21-31-7-8-9-10-12-18-5-27-13.	Lived 20 days
Mrs. Geo. S.....	14-8-21-2-7-9-10-12-16-17-18.	Lived 12 days
Mrs. A. L. P.....	14-21-28-18-8-9-7-17-11.	Lived 2 days
Mrs. J. R. T....	1-8-26-14-21-7-5-9-10-13-16.	Lived 3 mos.
Mrs. C. F. R....	1-8-7-21-18-16-17-9-10-13-38-6.	Lived 6 mos.
Mrs. Cora A....	14-5-8-9-10-13-4-21-18-16-17-31-6.	Lived 7 mos.

LIST OF PATIENTS WHO LIVED ONE YEAR AND SEVERAL MONTHS.

Mrs. G. W. W...	1-3-15-13.	Lived 1 yr., 7 mos.
Mrs. M. S.....	1-3-13-15-16-17-21-25.	Lived 1 yr., 8 mos.
Mrs. A. R.....	1-21-7-8-9-10-4-14-16-17-21-26.	Lived 1 yr., 3 mos.
Mrs. L. G. S....	14-13-4-7-8-23-17-18-20-23-26-16.	Lived 1 yr.
Mrs. E. M.....	13-2-4-7-12-14-16-17-18-20-23-26.	Lived 1 yr.
Mrs. H. E.....	14-15-27-26-28-16-17-18-7-8-9-13.	Lived 1 yr., 8 mos.
Mrs. L. C. G....	4-12-7-9-14-21-18-23-26-6-8-16-17.	Lived 1 yr., 1 mo.
Mrs. J. E.....	20-13-14-6-7-8-9-18-16-17.	Lived 1 yr.
Mrs. M. C. S....	1-29-4-6-8-7-9-13-14-16-18-23-26.	Lived 1 yr., 7 mos.
Mrs. M. W.....	7-8-11-14-20-18-17-41.	Lived 1 yr., 8 mos.

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LIST OF PATIENTS WHO LIVED TWO YEARS AND SEVERAL MONTHS.

Mrs. R. G.....	7-13-9-10-14-18-16-17-23-24-20-26-21.	Lived 2 yrs., 1 mo.
Mrs. H. A.....	15-21-18-17-8-7-11-27.	Lived 2 yrs., 2 mos.
Mrs. D. M.....	1-14-13-9-7-6-4-16-17-18-26-27-21-41.	Lived 2 yrs., 10 mos.

PATIENT WHO LIVED THREE YEARS AND SEVERAL MONTHS.

Mrs. E. L.....	14-13-21-18-16-17-23-26-27-7-8-9-10	Lived 3 yrs., 2 mos.

Since this report was compiled a few additional cases have come into the two-year period and these will be published with subsequent reports.

From my experience with the heat technic in both operable and inoperable uterine carcinoma, I am convinced that it offers more as a primary measure, both in the operable and inoperable uterine cancer case, than any other method of treatment so far devised. I believe that I am warranted in this conclusion not only from my own experience but from that of many surgeons who have followed my work and reported their results to me. One of these is from Dr. W. J. Mayo who reports, in a personal communication, forty-three cases in which the uterus was removed by panhysterectomy following the application of heat, and in twenty-five of these no carcinoma cells were found. These uteri were removed all the way from twenty-five days to one year after the application of the heat. In the eighteen remaining cases in which carcinoma cells were found, the time elapsing between the use of the heat and the panhysterectomy was from five days in the shortest interval to four months, seventeen days in the longest. In reference to these eighteen cases, Dr. Mayo in his report adds the following: "In the cases in which carcinoma was found after the hysterectomy, the cautery had not been as thoroughly applied as it should have been, especially that it had not been carried up into the uterus as far as in the other cases." Dr. Wm. C. MacCarty, one of their pathologists, also told me that they had made an especial effort to find the cancer cells in the removed specimens, which had been subjected to the heat technic.

Dr. S. M. D. Clark, of New Orleans, has also had a large series of cases with practically the same results. It is to be regretted that we have no clinical method by which the degree of malignancy can be determined from the gross appearances of the disease. I am

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sure that we have all had the experience of seeing some bad cases, as far as the physical appearances are concerned, do well; while others that seemed to be most favorable for permanent results in an operative way, did badly as far as a reccurrence of the disease was concerned. This is well illustrated by a case of a woman, aged sixty-four, who had a small carcinoma of the cervix combined with a marked procidentia. It seemed so easy, from an operative standpoint, that I cauterized her cervix in a rather perfunctory way and then did a vaginal hysterectomy, following the usual knife technic, attaching the vaginal walls to the broad ligaments. In six weeks, this woman's pelvis was filled with carcinoma, and she died from the disease in a few weeks more. This case, I am sure, would have been considered most favorable for a Reis-Wertheim operation by those surgeons who are partial to that procedure. But the result shows that either my judgment was poor, or that I overlooked the fact that the degree of malignancy can never be told from the naked-eye appearances.

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DISCUSSION.

DR. THOMAS B. NOBLE, Indianapolis, Indiana.—I would like to ask Dr. Percy how he deals with those cases in which the cauliflower excrescence has invaded the upper vaginal zone and the vagina is narrow so as not to admit his water-cooled speculum, and the uterus is fixed so that the normal right angulation of the cavum uteri is maintained with that of the vagina? Or again in those cases in which the speculum because of uterine fixation cannot possibly reveal the cancerous growth. In some cases the cauliflower excrescence is so large that with a small vaginal canal one is unable to deliver in the upper portion of the lumen of the speculum the entire cancerous growth. I would like to ask him what he would do in those cases.

DR. GORDON K. DICKINSON, Jersey City, N. J.—I would like to ask Dr. Percy if his pathologists make microscopic sections after death, and there are deaths, and whether it is the heat that kills the cancer cell or is it the subsequent cicatrization?

DR. PERCY (closing).—In reply to the first question I would say that where the vagina is small and involved in the cancerous process,

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the vaginal dilator should be used. An objection that has been urged against this instrument is the production of cracks that sometimes appear in the mucous membrane, thus encouraging the disseminations from the cervical growth of the cancerous process by autotransplantation. I am not yet convinced that cancer can be made to grow in this way. Again, if we look for the little shot-like masses that by careful search can often be found under the vaginal mucous membrane, we will in the majority of cases, I believe, find the real explanation of the development of carcinoma after the use of the vaginal dilator. My own practice is to swab out the vagina with iodine or Harrington's solution and then gently dilate the vaginal tube. This canal was intended to be dilated and if it is done in a reasonable way with the dilator, a much better and therefore more effective application of the heat can be made.

As to the angulation of the uterus and having a heating iron to fit the varying positions of the uterus, this is not practical as I found when I attempted it. It is exceedingly difficult to get the angle you may want for an individual case. The uterus, on the other hand, is never so firmly fixed that, when the abdomen is opened, it cannot be turned down or brought up in order to straighten the cervical canal. An important additional aid is the making of a crucial incision with the cautery knife through the uterocervical junction in order to facilitate the passing of the heating head to the fundus of the uterus. There is no data on the pathology that Dr. Dickinson asks for. Occasionally I find that some one has reported that they have found under the microscope viable carcinoma cells after the application of the heat. I am very much interested to know how they determine that they are viable. My pathologist, Dr. W. H. Holmes, and my associate, Dr. L. J. Pollock, believe that the only way to determine this is to stain the freshly removed coagulated tissue. Heat is one of the best of fixatives, and if no other is used and the tissue is frozen, sectioned and stained, then only the cells which have been coagulated by the heat technic will stain. In other words, the dead cells take the stain while the living cells do not take the stain when the tissue is sectioned without fixation.

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GALL-BLADDER TROUBLE COMPLICATING DISEASE OF THE INTERNAL GENITALIA.

BY

J. H. CARSTENS, M. D.,

Professor of Abdominal and Pelvic Surgery, Detroit College of Medicine and Surgery, Detroit, Michigan.

WHEN in the process of evolution, some thirty years ago, the gynecologist of the past developed into the pelvic surgeon, it was soon found that the great difficulty in this new field was to make a correct diagnosis, and it was noted that as our experience increased we had to deal with many complications. Since then the removal of ovarian tumors and the plastic operations have been simplified. The diagnosis, as a rule, was generally correct, so that now there are few conditions which can be mistaken for an ovarian tumor. When it comes to the inflammatory and septic conditions especially, there are so many complications that mistakes in diagnosis are often made. Sometimes the diagnosis is correct, and the disease is present just as diagnosticated, but something else is found which was not suspected. Often the diagnosis between right-sided pus-tubes and appendicitis is not easy, for sometimes both exist at the same time. Often an extraperitoneal abscess is taken for a pus-tube, with disastrous results, as a rule. Sometimes no pelvic trouble exists, but there is trouble in the intestines, as a diverticulum, or adhesions causing partial obstruction may be found, instead of ovarian or tubal disease. These conditions are sometimes present without pelvic disease, while, at other times, pelvic diseases exist, as well as the conditions enumerated. Hence the pelvic surgeon soon found that he was not able to limit his practice to pelvic surgery; that if he wanted to cure his patients, he had to do all kinds of abdominal operations. Thus, as our diagnostic skill has increased, and our operative technic has improved, we no longer limit our practice to the surgery of the female pelvic organs, but we have created and developed and made what to-day we call, "abdominal surgery," and now,

"No pent-up Utica confines our powers,
The whole extent of the abdomen is ours."

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We have not only settled the moot questions involved in diseased conditions of the pelvic organs, but have cleared up the diagnosis of appendiceal complications which were, at first, apparently so difficult. Then we began to deal with the complications observed in pelvic diseases when associated with trouble in the upper abdomen. We were soon able to show that jaundice, as a symptom, was but seldom found in gall-stone or gall-bladder diseases. There were plenty of symptoms which made it comparatively easy to establish a diagnosis of the disease of the gall-bladder. We were also obliged to invade the field of the gastroenterologist, because we were able, when the abdomen was opened for pelvic troubles, to explore the stomach, pylorus, and intestines, and to find abnormal conditions that had not been suspected by the practitioner of internal medicine.

With the aid of the wonderful discovery of Röntgen, the *x*-ray, we can now diagnosticate many of the more obscure stomach and intestinal disturbances. To-day every pelvic surgeon must be an all-around abdominal surgeon; in fact, no one has a right to do pelvic surgery unless he is also a master in abdominal surgery, and has thoroughly investigated the patient's condition from every standpoint to determine if there exist any other abdominal troubles; and is prepared to operate on them, if advisable, at the same time. We can all do multiple operations on a patient at one time; we can also jeopardize the patient's life by trying to do too much in one operation. Still we should not subject a patient to two operations if they can be done under one anesthetic. This may frequently be done *if we are prepared to do it;* if we are not, it is difficult for us, and hazardous to the patient to perform an additional operation, not contemplated from the start. The point I wish to emphasize is that a correct diagnosis of all the troubles should be made, if possible, and then we should be prepared to relieve them during one operation.

It has become quite common, when operating upon the tubes, the ovaries, or the ligaments, to remove the appendix at the same time, but when we operate for gall-bladder disease, or ulcer of the stomach or of the duodenum, the removal of the appendix is not very frequent, as far as I know. Much depends upon the safety of the pelvic operation. If we perform some vaginal operation, a curettage, or a trachelorrhaphy, or both, or if we operate for piles and a lacerated perineum, and then proceed to operate for pelvic adhesions, or shorten the ligaments, or remove the tube, the patient is not, as a rule, in a condition to stand another operation in the

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upper abdomen, especially if the operator is slow, and his operating facilities are not very good. At the same time, I am an advocate of doing pelvic- and gall-bladder operations at one time, if the patient's life is not jeopardized thereby. The danger is greatly reduced if we make a correct diagnosis before the operation, have everything prepared for any emergency, and are reasonably quick in our work. Naturally, a great deal depends also upon our assistants, the anesthetists, the nurses, and everything else that goes to make up rapid team work.

What I plead for is, that in all cases of pelvic trouble, be they ever so simple, and uncomplicated, like laceration of the cervix and perineum, or displacement of the uterus, we should put them entirely aside, and thoroughly investigate the patient's general condition as though she had no pelvic disturbance at all. Get a correct history of the case; try to make out whether the patient has, perhaps, some trouble with the appendix, a loose kidney, disease of the gall-bladder, gastric or duodenal ulcers—in fact, any abdominal trouble; and, if you have clear evidence, you can do an abdominal operation with the patient's consent, even if she thought she required only an unimportant vaginal operation. However, in all such cases that require an abdominal section for the purpose of operating upon the tubes, the ovaries, the ligaments, or the uterus, we should make an incision large enough to explore the whole abdominal cavity. With our modern and aseptic technic, we need not limit ourselves to as small an incision as possible, as we formerly did to prevent postoperative hernias. We can now afford to make a free incision in all cases where we suspect any other abdominal diseases. With the gloved hand thoroughly cleansed and dipped in saline solution, we can explore the whole abdomen, and thus make it possible for us to learn the exact state of all the abdominal viscera. In this connection let me say that in all these cases it is best to have the consent of the patients, and have them understand that we should be allowed to do anything that we think is for their best interest, thus preventing repeated operations which might otherwise become necessary.

How many patients are we called upon to operate on, who have been subjected to several operations before, simply because the previous operator was a poor diagnostician, and recognized only the one pathologic condition, and operated for that?

There is a limit to a patient's ability to stand numerous operations, and we certainly must work safely. Sometimes it is better to per-

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form two or three operations at different times, but this should rarely be done.

We frequently find gall-stones associated with pelvic trouble, especially fibroid tumors, pelvic adhesions, and uterine displacements. It is claimed that in women gall-stones are five times more frequent than in men. If we inquire carefully into the history of these women, we shall find that they often have had puerperal fever, septic conditions following labor, or miscarriages, and that they were confined to bed for from four to six weeks. Even though the patient complained of no symptoms, we can, usually, by palpation, detect gall-bladder disease, and be prepared to relieve it when operating for the other complications.

To sum up, I would say: (1) Many women with pelvic trouble also have disease of the gall-bladder and other organs in the upper abdomen. (2) No patient, with even simple pelvic disease, should be operated upon unless a thorough examination has been made of all the abdominal organs. (3) In cases of doubt, the incision should be large enough so that the whole abdomen can be explored. (4) In all pelvic operations, where gall-bladder disease exists, the latter should be operated at the same time; provided that the patient's life is not endangered by prolonging the operation.

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GALL-BLADDER SURGERY.

BY

JOSEPH H. BRANHAM, M. D.,

Baltimore, Md.

SURGICAL interference in gall-bladder conditions is nearly always necessitated by cholecystitis and cholelithiasis. Traumatic conditions and tumors, while they may necessitate operations, occur so rarely as to be of little importance.

The walls of the gall-bladder consist of the same material that is found in other hollow organs; the muscular coat is associated with some elastic tissue and is usually very thin. Only a very small percentage of the bile secreted can be contained in the gall-bladder and, therefore, the function of the gall-bladder as a reservoir is of slight importance. That the gall-bladder relieves tension, when the duodenum is distended with gas or fluid, seems to be of some importance, since the common duct passes through the wall of the duodenum in an oblique direction, so that there is present a perfect valve mechanism which renders regurgitation impossible. When there is great distention of this part of the intestinal tract, the flow of the bile is necessarily arrested and at such time an elastic reservoir, such as we have in the gall-bladder, may greatly relieve the tension in the bile-ducts. That this is the case, is evidenced by a decided dilatation of the ducts after the removal of the gall-bladder.

Many animals have no gall-bladder at all, but instead have rather large and distended ducts; in other animals the gall-bladder is many times larger in proportion than in man, and in these the storage function is of great importance. When it comes to surgical interference in a very large number of cases of gall-bladder disease, the gall-bladder has already ceased to functionate, either because it is filled with a thick, tenacious mucus mixed with bile or stones, or, because of inflammatory changes in its walls which have destroyed the muscles and left a thick, nonelastic, fibrous organ which is entirely useless.

Etiology.—One of the facts which seems definitely to have been established concerning gall-stone disease is that gall-stones are caused by infection of the gall-bladder; cholecystitis is a primary

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disease, gall-stones a secondary; these, in turn, however, may increase the inflammatory conditions. In a very large proportion of gall-stone cases pathogenic bacteria can be demonstrated in the bile, in the walls of the gall-bladder and even in the gall-stones themselves, often forming a nucleus for the stones. The route by which the infection reaches the gall-bladder seems to vary. Careful investigation indicates that it is most often by the blood current. Contrary to the opinion formerly accepted, streptococci are the most common form of infective organisms, colon bacilli, and the bacilli of typhoid fever are frequently found and, in many cases, mixed infection is present. The bacteria found in the gall-bladder during cholecystitis, or in the gall-stones, have an especial affinity for the gall-bladder and ducts when injected into the blood current of animals.

The infectious nature of cholecystitis and gall-stone disease being accepted, the predisposing causes become of great interest. The patient nearly always has some acute infectious disease, such as typhoid fever, pelvic abscess, or tonsillitis, from which the infection may have arisen. Women, especially those who have had children, are more subject to this disease than men. It is also a disease of middle and advanced life, being very uncommon before twenty. People who live a sedentary life, and those who are overfed and overfat, are often affected. It has frequently been observed that infectious bacteria, when introduced into the gall-bladders of animals, disappear without causing symptoms but, if the duct is closed, infectious processes always develop.

These observations demonstrate, beyond a reasonable doubt, that stasis is a very important element in the production of this condition. The lax condition of the abdominal walls, and the general want of muscular tone in the classes of people subject to this disease, predispose to incomplete emptying of the gall-bladder.

The fact that women, especially in Europe and America, have been its most frequent victims, would indicate that the wearing of ill-fitting and improper corsets is probably a cause of this partial stasis. Japanese women, who do not wear corsets, and who are almost always strong and active, are no more prone to this disease than men. In Japan, in 8406 necropsies, Miyake found gall-stones in 3.05 per cent., less than half as often as in Europe and America. The sexes were about evenly affected.

Stasis, which has long been recognized as an important element in the causation of appendicitis, is, in my opinion, still more important in the production of cholecystitis.

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Treatment.—The medical treatment of gall-bladder disease is, I think, of great importance. Although we know that the removal of the gall-bladder is not followed by very serious conditions, and that drainage is not a dangerous procedure, yet our studies indicate that the gall-bladder has certain functions, and drainage always causes a certain amount of damage to this organ. The adhesions which follow an operation are a source of pain and inconvenience, and, therefore, operative procedure should not be resorted to until proper medical and hygienic treatment have proved ineffectual. Such treatment generally consists of proper diet, remedies to stimulate the free flow of bile and more especially such a course of exercise as will restore the tone of the abdominal muscles, and, if possible, the normal contour of the abdomen.

The surgical treatment of gall-bladder disease is of recent development. The relative advisability of cholecystostomy and cholecystectomy has been discussed *pro* and *con* by hundreds of surgeons. In the *Medical Record*, May 16, 1903, Woods Hutchinson strongly advised cholecystectomy for gall-bladder diseases. Bland Sutton, in 1907, agrees with this opinion. Mayo Robson, shortly afterward, urged the advantages of cholecystostomy. In 1913, before this Society I strongly advocated the advantages of the removal of the gall-bladder and predicted that this would be more and more the operation of choice. This prediction of mine has been completely fulfilled.

The advantages of cholecystectomy are: (1) The number of permanent cures effected by it are greatly in excess of those effected by cholecystostomy; (2) secondary operations are very rarely needed; (3) malignant conditions, only to be detected by microscopic examinations, are not infrequently found upon removal of the gall-bladder, and thus the danger of malignant development is prevented. Cholecystectomy is also better where there are marked diseased conditions, such as irregularities of the mucosa, presence of gall-stones, fibrous thickening of the gall-bladder or stricture of the cystic duct, and because it does not leave *in situ* a diseased organ to cause future damage. But its greatest advantage is that it does away with the adhesions which always follow drainage, and are a source of discomfort and danger. However, in cases where the gall-bladder is comparatively normal, and where the walls are not markedly diseased, cholecystostomy gives excellent results and should be resorted to. But, in my opinion, many cases in which the gall-bladder is not sufficiently diseased to justify removal could be cured by proper medical treatment, and where the gall-

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bladder is diseased to such an extent as to require operation, cholecystectomy will give the best result in most cases.

The operative mortality following cholecystectomy is probably not greater than that following cholecystostomy, even when we take into account that cholecystectomy is the operation of choice in severe cases.

The last reports from the Mayo Clinics indicate that cholecystostomy is much more dangerous. This can be readily explained. In cholecystostomy there is left a diseased and often infected organ—a source of possible secondary trouble. If everybody removes an infected appendix, why not remove an infected gall-bladder?

Operation.—In removing the gall-bladder, the subperitoneal dissection is of importance, so that we leave plenty of serous tissue to cover over the denuded surface. Unless the condition is one of acute infection, the cystic duct should either be severed by cautery, or carefully disinfected, and the wound closed without drainage. A careful inspection of the ducts should be made in order to make sure that there is no obstruction. Where there is a condition that renders obstruction to the common-duct probable, drainage is the operation of choice.

The argument that in cholecystostomy we have an easier route for drainage is to be considered, but it is counterbalanced by the greatly lessened chance of future disease after extirpation.

DISCUSSION ON THE PAPERS OF DRS. BRANHAM AND CARSTENS.

DR. HERMAN E. HAYD, Buffalo.—So far as the paper of Dr. Carstens is concerned, there is no question that we should try to make as good a diagnosis as possible. That goes without saying and we must not forget, when we are examining the pelvic organs, there are organs above that may be diseased, consequently we should examine the entire abdominal cavity if the case is not an infectious one. But whether it is wise to combine operations from below with operations above is a question of individual judgment. If the operation that you are going to do below is simple and of short duration, and you are an expeditious operator, probably you can satisfactorily go up above and do whatever surgery you wish on the gall-bladder. As a rule, it is perhaps best to make two operations, and have a living and satisfactory patient than to prolong the operation unnecessarily and have a dead patient.

The paper of Dr. Branham was especially interesting to me, and I am sorry Dr. Porter was unable to read his paper. It is very evident that Dr. Branham has not read Dr. Porter's last paper which was published in the Journal of the American Medical Association. It is a most philosophical presentation of this subject.

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Those men who say the gall-bladder has no function have not studied their physiology, because in the gall-bladder the bile gets its glycocholate and taurocholate of soda and its mucin and by these elements its proper alkalinity is established. Such bile does not irritate the pancreatic outlet, it activates the pancreatic secretion. Moreover, the bile from a functionating gall-bladder has twice its power in starch digestion and three times the potency in its fat digestion than bile coming direct from the liver. These things are facts; they are established by the best laboratories in the country; and because we can get along without a gall-bladder, because it is not a vital organ, is no reason why we should say it is not a potentially useful organ so far as digestion is concerned. In the second place, if patients from whom we removed the gall-bladder were all well, that would make the proposition a simple one; but the statistics of different operators show that from 20 to 35 per cent. of these cases where the gall-bladder is removed are not well, and why are they not well? Because in a very large percentage of cases gall-stones have been overlooked and if a gall-stone has been overlooked and it is necessary to go in a second time, you have a serious undertaking when you have no gall-bladder to guide you. In the third place, which is the most important of all these propositions, gall-stones are the result of a previous infection, yet in from 53 to 70 per cent. of the cases that have gall-stones the gall-bladder is sterile. Now, if the gall-bladder is sterile, why should we remove it? It is thin, elastic, distensible, it has a smooth peritoneal coat, and it has the possibility of future physiologic function. It is not a pathologic unfit organ.

So far as cures are concerned, cure is a very relative proposition and a very elastic term. Swope, out of 2000 cases of cholecystectomy reported about 97 per cent. of cures; other men report about 60 to 70 per cent. of cures. I should like to examine Swope's cases because the personal equation enters so largely into the estimation of cures of any case. Again, if removing the gall-bladder lessened adhesions, which the doctor tries to say it does, that would be a rather strong indication for its removal, but it is not so. Deaver, as a result of his experience, takes the position that when the gall-bladder is removed there are more adhesions than when the gall-bladder is drained, and in my cases of cholecystectomy I found dense adhesions in a second operation. Consequently we cannot treat this proposition in the way some of our progressive surgeons are doing. They say that as the result of their experience they are taking out more gall-bladders. I maintain that every gall-bladder should be treated individually, and no man should say that he is taking out more gall-bladders without specifying the kind, because just as soon as he makes that statement, then he, is no doubt, robbing nature of a very important organ, because if not specially diseased it should not be removed.

So far as the dangers of cholecystectomy are concerned, and this is a practical phase of the subject, it is possible that the Mayos and Erd-

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mann, with their beautiful clinics and splendidly equipped operating rooms, with splendid assistants, with their experienced and skilful anesthetists, they can remove the gall-bladder and not have a greater mortality than you or I do. I am satisfied, however, that if I were to remove all gall-bladders, my mortality would be a great deal larger than it is at present. In a discussion in Buffalo, Crile took the position that the reason why he was removing more gall-bladders than heretofore was because in so many of his cases the wound has broken open a second time; that the gall-bladder had discharged, filled up and discharged again. In that discussion I told him it was not my experience, and that in over 200 cases of gall-bladder trouble for which I had done cholecystostomy, I had only four cases where the gall-bladder ever broke open after the original operation. Now, if I had only four cases in which the wound broke open, I cannot see any object in subjecting patients to the increased risk and to all of the other possibilities of poorer digestion as a result of the removal of the gall-bladder.

Again, Dr. Charles Mayo takes the position when these patients are not cured of their dyspepsias it is because the gall-bladder was not removed. You know, gentlemen, that is about as unscientific a statement as a man can make and I cannot believe Dr. Mayo made it, because we must eliminate the dyspepsias originating from so many other troubles, as retroverted uteri, or chronic appendicitis, or eye troubles or thyroid disease. Any one of these conditions and many others can produce dyspeptic symptoms and therefore we cannot always attribute the continuation of these dyspeptic symptoms to the retention of the gall-bladder. I am satisfied the pendulum is moving now with an increased momentum in the direction of cholecystectomy and it is a question of only a few years when men will come back to the point of removing gall-bladders only when it is absolutely necessary. When you have a shriveled, functionless gall-bladder, where there is no possibility of relieving the symptoms otherwise, it should be removed and yet I have often left such a gall-bladder in a patient and the patient has done remarkably well, but in these cases there is a possibility of cancer developing in that shriveled up organ, which makes it an indication for the removal of the same.

Dr. Albert Goldspohn, Chicago.—I think it is our duty to make as complete a diagnosis as we can before operation and I do not think favorably of the idea of making a diagnosis after we have opened the abdomen because we can see better. That policy results in harm to the patient. I get gynecological patients every now and then that have been to see other men and have had some operation proposed to them in the upper abdomen, either for gall-bladder disease or for ulcer of the stomach, or for ulcer of the duodenum. In most cases the epigastric symptoms disappear after purely pelvic operating, with or without some medical care afterward. I have also known of cases that have been opened for ulcer of the stomach or for some pathology supposed to be there that was not found, in cases that I know had something the matter

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with them gynecologically. The method I pursue to obtain more information whether there is present, in addition to the gynecological condition, also real pathology in the upper abdomen, is by making use of the principle that I hold that gynecological lesions are eased or relieved along with their referred epigastric symptoms by continued recumbent posture. Every pronounced gynecological case has more or less unpleasantness or dyspepsia or discomfort about the epigastrium. With all due respect to the neurologists, I cannot agree that pelvic lesions have no effect upon other parts of the body and if a given case is a gynecological one with only referred functional disturbances in the epigastrium, this fact will appear from the improvement in the local and referred symptoms after putting the patient completely at rest. Place such doubtful patients, like all acute pelvic cases, in constant recumbency with warm, moist dressings on the abdomen properly insulated, and with suitable diet and attention to the alimentary canal, preferably in a hospital for a week or two. Then you will have more nearly a correct impression as to whether you will find something wrong in the epigastrium, in addition to what you know is present in the pelvis and you can talk to your patient about what you probably want to do, and accomplish it without inflicting nearly so great wear and tear upon the patient surgically.

As to the relative merits of cholecystectomy and cholecystostomy, I have always favored cholecystostomy; and I know of only one single instance years ago where I had to remove a stone secondarily from the gall-bladder that was drained. However, some gall-bladders are too badly disorganized. They may be shriveled up, as we find them with common duct stone or they are greatly thickened, infiltrated and stiff, with inflexible walls. These need to be removed. But other diseased gall-bladders, especially those with stones in them, can be made to return to health by a sufficiently long drainage, provided that we keep the gall-bladder clean during that length of time. You cannot drain any such sinus for any length of time before there will be infection to a greater or less degree from without inward; but in the gall-bladder we can counteract that by washing it out daily, but not with strong antiseptics. I like to use a solution of the volatile oils, such as the oil of cassia or the oil of cloves in particular. They are soluble in warm water in at least one-third of one per cent. Take a saturated solution of boric acid and add to it these volatile oils and you have something that is potent and not toxic. After the first week after operation I like to have about a pint of this solution delivered in the bottom of the gall-bladder daily by irrigation through a small soft rubber catheter within a much larger drainage tube, thus securing a current from within outward. The results are very satisfactory, particularly in cases that have undergone a pelvic operation as well as a cholecystostomy. I could not have done a cholecystectomy with equal satisfaction to the patient and myself.

Dr. John W. Keefe, Providence, R. I.—It seems to me this matter of gall-bladder surgery is not settled, even to-day. When doctors

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attend some of the famous clinics and see dexterous men operate, they go home and say that the Mayos are taking out all of their gall-bladders now, and proceed to do likewise, which is attended with a frightful mortality in consequence thereof. The average surgeon after removal of the gall-bladder will have dead where he would have live patients by opening the gall-bladder and draining. There is a very large percentage of cures brought about by drainage of the gall-bladder, and any surgeon is able to drain the gall-bladder. It is said, if we find a thickened gall-bladder, one that is one-eighth of an inch thick, it should be taken out, but I have seen patients get well and remain well just by drainage alone. I heard Dr. Finney, of Baltimore, speak on this subject about one year ago. He said, "I concluded I would take out most of these gall-bladders, but now I have four cases in the hospital that have biliary fistulæ, and I do not know what to do with them. I am worried to death about them." All cases in which the gall-bladder is removed are not followed by cure. There is a marked morbidity following the operation and the formation of adhesions following cholecystectomy. Only last week I removed a gall-bladder from a patient, although two months ago a Roentgenologist told me there were three stones present. I looked at the plates myself and I thought the shadows were stones. He pointed out a little ring and a dark center and said that nothing could give one that shadow except a gall-stone. He stated it could not be a stone in the kidney. I operated, and there was not a single stone found in the gall-bladder.

I had occasion to reopen a case in which I had removed the gall-bladder, and found the gastrohepatic omentum adherent; then I found the stomach and pylorus in the first part of the duodenum adherent over the site where the gall-bladder was. That was one of the most trying cases I have ever had in gall-bladder surgery, and I do not know that I have done the patient any good with a secondary operation.

In another instance recently a doctor in the south had removed a gall-bladder. He removed it a year ago this month, and the patient has had a biliary fistula more or less since then, the fistula occasionally closing, then reopening. I concluded that probably the patient had a stone in the common duct. I reoperated, found plenty of adhesions, and removed a stone near the ampulla of Vater. We may remove all stones we can feel in the common duct or the gall-bladder and yet there may be stones up in the liver. I recall one case in which at autopsy there were a thousand stones found in the ducts and in the liver itself. The removal simply of the gall-bladder would not have cured that case.

I feel very definitely that the average surgeon in this country should just cut into the gall-bladder, insert a little tube, and drain it. The experts can take out more gall-bladders and, very likely will, than the average surgeon, but I do think that even the experts will find considerable morbidity following cholecystectomy.

Dr. John Norval Bell, Detroit.—There is one factor in connection with these gall-bladder cases which may have something to do

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with the determination of the advisability of cholecystostomy or cholecystectomy, and that is the question of whether or not the infectious material is all done away with after prolonged drainage. Most surgeons have had the experience of having performed cholecystotomy on a case, with drainage going on for a certain number of weeks or more, and then the wound closed up, but later on the patient developing a fresh attack of cholecystitis. A pathologist in our institution told me that in some cases of that nature he had found the gall-bladder had drained long enough so that the secretions were sterile, but on subsequent removal of the gall-bladder, after making sections, small stones were found in the gall-bladder wall, also, there were isolated streptococci scattered throughout the wall. That may have a bearing on these recurrences we encounter now and then.

DR. THOMAS B. NOBLE, Indianapolis.—The advice to close the abdomen after cholecystectomy without drainage is absolutely wrong. No man can tie a ligature about the neck or stump of the cystic duct and know that it is secure, so that instead of adopting the rule of closure without drainage, make it a rule to drain, and many of your cases will get well that would not otherwise get well. I have seen patients die that were undrained, who would have gotten well if they were drained.

DR. CARSTENS (closing on his part).—In my paper I simply made a plea for doing more operations, if possible, at one sitting. I have had these cases in association with abdominal hysterectomy, and one can do an abdominal hysterectomy and without much trouble, remove gall-stones at the same time, instead of subjecting the patient to a subsequent operation.

As far as the paper on cholecystectomy is concerned, I did not say anything about the operative technic. We have to judge each case by itself in regard to whether it should be subjected to cholecystectomy or not. I think Dr. Hayd hit the nail on the head, still I want to go a little further. I drain the gall-bladder, especially if there is septic material in it. I drain the gall-bladder also because I think there may be some stones left in there, and in the course of a week or so they come out and no stones are left, and that makes me feel safe. I believe cholecystectomy is a more difficult operation than cholecystostomy, and rarely do I perform it, although once in a while I believe it should be done. But the cases must be individualized. I want to make the point that some of these gall-bladders ought not to be drained. Some fifteen or twenty years ago I had a controversy with the late Maurice Richardson of Boston. He claimed that all gall-bladders containing gall-stones were infected. That statement surprised me, so I went home and every gall-bladder I operated on afterward was examined carefully, and I could not find an infected gall-bladder except here and there in an acute case that I had diagnosticated. I made up my mind that it was wrong to say that all gall-bladders containing stones were infected. All of them are not necessarily infected, although some of them may be on account of the inflammation and

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irritation caused by the gall-stones. I found out also that when a gall-bladder contained one stone of the so-called mulberry variety, in trying to expel that stone the gall-bladder wall would thicken, its muscles being put in action like those of a blacksmith who uses a hammer. That gall-bladder was not infected, it had thick walls because it was working hard to squeeze out that stone and could not do it. When I opened the gall-bladder, out popped the stone. I carefully sewed up the wound with a double row of Lembert sutures, dropped the gall-bladder back and closed without drainage. I have had quite a number of cases treated in that way. I think it is an ideal method of dealing with these cases, but I would not advise it always.

DR. BRANHAM (closing).—I am afraid I did not make myself quite as clear as I should have done. Dr. Hayd seems to have gotten a very wrong impression of what I said. I judge from his remarks that he thought I was advising the taking out of all gall-bladders whether diseased or healthy, but I did not advise that. I do advise the taking out of all diseased gall-bladders, and I think a greater proportion of cases with suitable drainage would be cured without any operation. In spite of the unfavorable criticism, I feel I can stick to my guns about the removal of the gall-bladder, and also about closing the abdomen after the removal of the gall-bladder. When I read a paper on this subject in 1913, the Mayos were very strongly against cholecystectomy and advised it in very rare instances, so the fact that they are now changing their opinion and are advising cholecystectomy in markedly diseased gall-bladders, is no reason why I have advised it here. I advised it before they did. I have not had a large experience; but I have taken out quite a number of gall-bladders, and have not had any mortality from this procedure. I have had a number of deaths from drainage of the gall-bladder. That occurs practically always in operating on desperate cases, when patients are too sick to take out their gall-bladders and almost too sick to drain them.

The removal of the gall-bladder is not a dangerous operation. It can be done by any surgeon who has practised it and knows his anatomy thoroughly. I do not think it is as dangerous an operation as drainage of the same kind of gall-bladder would be. That looks to me like common sense, because if you take out a diseased organ which is always a source of danger, you get rid of that infectious diseased organ which is utterly incapable of being cured or restored by drainage, and your patient has not that additional danger to fight.

So far as the function of the gall-bladder is concerned, I have great admiration for Dr. Porter, but I cannot agree with what Dr. Hayd has said. I think the function of the gall-bladder in digestion is about as imaginary a thing as anybody could talk about. I have never heard any one talk about its having the function of digestion before. Bile has nothing to do with digestion, no matter where it comes from and to say that one-twentieth of the bile going into a little reservoir can have some bearing on the influence of digestion is absurd.

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I do not think we ought to close the abdomen when we take out the gall-bladder unless we are perfectly certain that the gall-duct and cystic duct are tied off securely and closed over with peritoneum from top to bottom, so that we have nothing but a smooth surface where we cannot have any adhesions. If you take out an acutely inflamed gall-bladder and put in drainage, the probabilities are you are going to have more or less adhesion; but if you make your dissection carefully and leave plenty of peritoneal surface to cover all raw surfaces, you will not have many adhesions if you take out the gall-bladder. I want to say contrary to Dr. Hayd's opinion, that a diseased, badly damaged gall-bladder, should be removed. I do not advise taking out healthy gall-bladders, but diseased gall-bladders are going to be taken out more and more as time goes on because you will thus get rid of the diseased organ.

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THE LEFT FALLOPIAN TUBE AND INTESTINAL STASIS.

BY

DOUGLAS H. STEWART, M. D.,

New York City.

It may have occurred in the experience of everyone present, that after the performance of a painstaking operation upon a sufferer from some abdominal trouble, that was in no way connected with a woman's genital tract, a pyosalpinx has been produced by a concealed gonorrheal infection. Possibly the tubal trouble appeared after the surgical wounds were completely healed; so that when all seemed to be clear sailing a sudden ileus and its toxemic storm arose from the new pathology. But with such a condition of affairs we have nothing to do, beyond mere mention.

This paper is based upon histories of two women whose tubes presented no evidence of being infected or of having been inflamed. One of the women had never married. The other had done so and had borne two children. Both women were well past the menopause. No claim is here made that the condition described is at all rare, only that it has not yet been dignified by being mentioned. Any doctor, who came across such a situation in exploring an abdomen, would consider it a band, and would then sever it in order to free the gut; but he would do so without giving thought as to its nature or its origin.

The condition is easily made out by means of a bimanual examination, with the investigating finger in the rectum, working against the counter pressure of an opposing hand, externally applied. The author's attention was called to the state of affairs in the following manner:

Case I was a maiden lady well past sixty years of age. According to her story, she had suffered for a very long time from some sort of an abdominal tumor that she could feel perfectly well with her hand. This tumor was not given a name by any of the many doctors who had attended her professionally; but every one of the number had advised a prompt abdominal exploration. Though this sort of thing had been going on for thirty years or more, the exploration had never been performed because the patient herself would not submit to any sort of an operation, nor would she consider the warnings of her advisers when they foretold future and

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evil results, if the procrastinating process obtained indefinitely. As might have been expected, when she came into the present writer's hands she had reached that mental and physical state of pain intimidation in which an operation was most welcome, because she rather hoped that it would kill her and so end it all.

The patient was both fleshy and distended; she evidently did have an abdominal growth, and palpation gave the idea that the growth was multilobular in character. An examination of the vagina was not refused if it were absolutely necessary; but the information was volunteered that if the womb were touched by a finger, or even if the nozzle of a syringe were to come in contact with it, then the whole abdomen would ache, pain and throb for hours afterward. The sensation was described as a dull, heavy, unbearable and disheartening ache, that nothing would stop until it finally wore itself away. Upon some occasions a hypodermic of morphine had been administered, in which event nausea had made matters rather harder to endure, and there was little, if any, counterbalancing relief. In short, the lady was most anxious to avoid a vaginal examination, and asked if there was not some way of dispensing with it. As is well known, much valuable information may be obtained at times through the rectal route. Therefore, that was employed first, and upon the anterior wall of the rectum was found a hard, rigid cord, or narrow band. Although this did not encircle the bowel, still its mechanical effect was such that the bowel was ballooned both above and below the well-marked ridge that was made in the lumen.

Replies to questions revealed that for an indefinite number of years the patient had been obliged to devote an hour or two daily to washing out the rectum with repeated enemata of soap suds, though at times solutions of table salt or of Epsom salts were employed for the purpose. This injection process was repeated over and over again until the patient thought that the result obtained amounted in solid contents to about an equivalent to a natural movement. The lady and her brother apparently took delight in saying that many physicians had seen the patient, and yet none of them could make a diagnosis. They were informed that they could put me in the same class as the others. The only opinion that could be formed on my part was that there was a partial obstruction by a band that might or might not come under the head of semi-volvulus; that there were tumors in the abdomen; that they were neither fecal nor tender; that the pain was caused by pressure upon nervous tissue, and that the exact abdominal condition could only be determined by actual exploration.

Operation was agreed upon and performed by the late Dr. Dawbarn. Before the patient was anesthetized, the band could not be made out by vaginal examination. Under anesthesia it could be felt, though its true nature was not apparent nor the manner of its impinging upon the anterior rectal wall. That is to say, something could be located and might even be described if one knew what it was beforehand. The abdomen was opened and, to quote

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the doctor, the interior looked like a pawnbroker's window that was hung with gold watches. The condition was due to rather large and multiple lipomata, mesenteric, and pretty much everywhere else in origin and situation. Their number rendered any attempt at removal out of the question. The doctor thought that destruction of the band would remove pressure, and with a free bowel plus an antifat regimen a good result might be expected. This was done, relief followed, and the pathologist thought that the hypertrophy of the Fallopian tube could be fully explained by surplus and unusual nutrition. So far as could be told, the adhesion was due to some cause in the bowel or in the bowel wall, but not in the tube that became attached to the wall and in due time derived an additional blood supply therefrom.

CASE II.—The second patient was a woman upon whom I had operated for retroversion and cystic ovary. The result was good and all went well for some eight years, at the end of which time she returned and stated that she was all right so far as any womb trouble was concerned; but that she could not get her bowels to move without prolonged and repeated enemata. Examination by the vaginal route revealed nothing abnormal, but per rectum the picture was almost identical with that of patient, Case I. This woman was very thin and the conditions were readily mapped out. There were no tumors but there was a well-marked enteroptosis with movable kidneys.

The differential diagnosis between the condition described and a normal Houston's valve is easy. The valve is elastic, the band is inelastic. The valve is so evidently within the rectum and the band manifestly outside of it. If a valve were burned or cicatrized, its shape could not be changed by gentle steady finger pressure, and quite possibly the differentiation could not be made, unless by an abdominal exploration.

The lesson drawn from the experience with these patients is that after the menopause because of some infection, or from some inflammation of the bowel or of its peritoneal covering, the Fallopian tube upon the left side may derive an additional blood supply through adhesion may thus take on a new lease of life and not go through the usual process of atrophy. This is not true for the whole tube but for a portion of it only. The thickened adherent tube does not expand or contract but dents the rectal wall so that the bowel is converted from a cylinder into a sort of semicylinder. This condition appears to be sufficient to act as a brake upon the fecal flow and to tire out the expulsive powers of the bowels therefore the viscus balloons, as if exhausted, both above and below the partial stricture. Furthermore, the severance of the band relieves all the symptoms, if the raw surfaces are properly covered.

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A CASE OF A GIANT COLON.

BY

THOS. B. NOBLE, M. D.,

Indianapolis, Ind.

MEGACOLON, or Hirschsprung's disease, is a congenital colonic anomaly, in which one or more parts of the colon are increased in size, both as to diameter of the lumen and the thickness of the wall. The condition may extend throughout the entire length of the colon, thereby increasing its size in its length, as well as all of its diameters. Being congenital, its symptoms begin early in life and, like congenital cystic degeneration of the kidneys, tend to end fatally.

The symptoms of megacolon are those of obstinate obstipation and constipation with abdominal distention, diffuse general abdominal distress, attacks of vomiting, colicky, cramp-like pains, sometimes movable tumors, and the general symptoms of fecal intoxication.

The case I desire to present is that of a young woman, twenty-seven years of age, whose inheritances are good. From early infancy to twelve years of age, she suffered continuously with constipation. Her parents say that they do not remember of her having a normal, spontaneous bowel movement. At about the age of twelve she had an attack of acute abdominal pain, with distention and vomiting. She had frequent chills and fever. She was given medicine to move her bowels, which failed. After about a week of such illness, one of our local surgeons of national reputation, who has since passed away, was called. He made a diagnosis of some form of abdominal tumor and advised an operation. She was started from her home in a neighboring city to Indianapolis for the purpose of having an operation performed, but on the way her bowels began moving and by the time she reached the hospital, the tumor had disappeared. Her general condition became rapidly better and no operation was performed. Six months after this experience, another attack similar in character occurred, and again by persistent purgatives and colonic lavage, she recovered from her second attack.

These attacks with varying severity have now recurred about every six months during the last seventeen years. Just previous to my seeing her, she had had a severe attack lasting ten days, in which she had abdominal pain, distention, vomiting and obstinate constipation. It was said that a tumor was located in the lower part of abdomen, but that after the passage of a very large, hard fecal mass, the tumor had disappeared.

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When I first saw her, her bowels had been moving with liquid stools under the influence of albolene. Her general nutrition was good. She had a muddy complexion, coated tongue, foul breath, and felt generally depressed. The abdomen was distended and doughy. Behind the uterus and seemingly fixed as a part of it, was a hard, globular body which did not pit on pressure, and was not painful. She had for some months a menorrhagia, and the picture was typically that of a uterine fibroid. The tumor lying behind the uterus crowded the uterus upon the bladder and produced frequent dysuria. I felt certain of the presence of a fibroid tumor, believing that it had largely to do in a mechanical way with her recurring attacks of intestinal obstruction.

She was operated eight months ago. A median abdominal incision was made, revealing, instead of a fibroid tumor, a colon enormously enlarged throughout its entire length, in the lower end of which lying just above the rectum and behind the uterus was a large globular fecal mass about the size of a croquet ball. The lateral sacculations throughout the entire colon were absent, but the organ was almost regularly tubular in character and looked very much in color and physical character like a collapsed uterus following a Cesarean section. Its walls had much the color of uterine muscle. I have seen the walls of the uterus when they were no thicker than were the walls of this colon. The feature of enormous hyperplasia was most striking. The general increase in size and thickness of the organ extended from the appendix throughout the length of the colon to within 2 inches of the bottom of Douglas' fossa. From this point downward the caliber of the gut and thickness of its walls seemed perfectly normal. Just what to do with this globus fecalis inside the gut and the colon itself was questionable. The removal of the fecal ball might have given temporary relief, but would not have removed the underlying pathology back of it. Colonectomy was determined upon as the safest and most satisfactory procedure.

The peritoneum was cut around the gut as it passed behind the uterus, and the rectum freed from its attachments between the uterosacral ligaments. Now pulling upward upon the gut, we were able to get enough of intestinal substance out of the pelvis to complete an anastomosis with the head of the colon, which was drawn down to it. The omentum was dissected loose from transverse portion of colon and preserved. It has been denied that the omentum can be preserved in colonectomy. That is not always true, for we were not only able to preserve it in this case, but have done so in a number of others. There were no clamps used in this operation, the technique of anastomosis being completed entirely with needle and thread. There was no shock following this operation, only 3 or 4 drams of blood having been lost. We had no infection in her wound, which extended from the symphysis within 2 inches of the ensiform. A short rubber tube was introduced through the anal sphincters to prevent hypertension upon the suture lines from gaseous distention. The tube was removed on the fifth day.

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This patient made as good a recovery as if we had done a simple myomectomy.

The patient presented herself recently in my office. Her tongue was clean, her complexion clear. She had gained 20 pounds in weight, her bowels were moving without assistance, twice, sometimes three times a day, and her breath was free from odor.

Apropos of this report, our records during the last four years show a series of twenty-nine cases in which the colon has been removed in whole or part. The conditions demanding this operation have been tuberculosis, carcinoma, and chronic irreparable distortion, with dilatation and stasis, due to pericolonic adhesions.

No class of cases has given us more gratifying results than those obtained in this series of cases.

Though the colon be abundantly supplied with blood and highly potential of infection, both the loss of blood and the accident of infection can be overcome by a simplified technic. Our plan of removal is briefly as follows: A free median incision is made. The omentum is lifted out of the abdomen, dragging the colon with it and held under tension in a fan-shaped spread at right angles to the axes of the body. With a sharp knife the posterior layer of peritoneum of the omental substance is cut free from its attachment to the colon in its entirety, and if the incision be made to hug closely to the muscular coat of the gut there will be no hemorrhage. This frees the omentum from the colon, preserving its blood supply, and leaves the colon attached only to its mesentery. The omentum is now spread out upon the upper abdominal zone and covered with moist gauze. The colon is next lifted up in same position as before, and by looking through the mesentery the blood-vessels are readily observed, doubly ligated, and cut with the intervening mesentery. That portion of the bowel to be removed is now included between two pairs of silk ligatures. The first pair is placed about the bowel just above the ileocecal entrance and the second at the lower end of the sigmoid. By cutting between these two pairs of silk ligatures with a thermocautery, the colon is freed from all its attachments and removed. The cauterized stumps are now inverted by a silk suture, as is the stump of appendix in an ordinary appendectomy. The head of the colon is next united to the lower end of the sigmoid by a lateral anastomosis made with a three-row suture. Obviously, this procedure has now formed a mesenteric foramen underneath the junction of the bowel which should be closed by a running suture of catgut. The omentum is next brought down and the stump of mesentery left by the removal of the colon, is sutured to it along the area from which the colon has been removed. Care

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should be taken not to wound the blood-vessels in putting in this line of suture. Care should be exercised as well in dealing with adhesions earlier in the operation, which are often found at the splenic flexure, which sometimes hold the colon in close proximity to this viscus. These adhesions should be cut and not torn loose, for, if torn, they may bring away part of the splenic capsule, which leads to very annoying and troublesome hemorrhage. The abdomen is closed in the usual manner.

DISCUSSION.

DR. JOSEPH H. BRANHAM, Baltimore.—This is certainly a very remarkable and interesting paper, and something ought to be said in the way of commendation. I think the operative procedure which Dr. Noble has advocated is a decided improvement over the Lane method.

I would like to know what the mortality was in these twenty-nine cases, if he had any?

DR. VAN AMBER BROWN, Detroit.—I have seen Dr. Noble do this operation, and I have seen Mr. Lane do it a good many times, but Dr. Noble's way of doing it is simplicity itself as compared with the work done by Mr. Lane.

DR. NOBLE (closing).—The twenty-nine cases that I referred to cover the records of four years. The type of operation I have done has been partial colonectomy for carcinoma at the head of the colon, with removal of several inches of the terminal ileum, the appendix, the ascending and transverse colon, with its subjoined mesentery, and the mesenteric lymphatics. I find that of nineteen cases, in ten none of them died after the operation, but two of them have died since. There are eight patients living who were operated over two years ago. Of the cases in which the entire colon was removed, three have died. I lost one of them by an accident, having used a catgut ligature around the lower end of the sigmoid when I ligated the gut previous to cutting it away. My assistant picked up the end of the gut and the catgut simply rolled off and permitted highly infectious material from the sigmoid to enter the abdomen. The patient died promptly from peritonitis. Silk, as I have said in the report of my cases, is free from this danger. It will go down through the smooth wall of the large intestine and stay fixed; it will not roll off the end of the bowel. You can trim down that portion of the gut distal to the ligature with the cautery or scissors or with what you choose to use and make the inversion of the stump much easier without the danger of having the ligature slip off.

I cannot give you the number of colonectomies I have done, but I have lost, as I have previously said, three cases in which the colon was removed in its entirety. One was a case in which there was inanition, long continued intoxication, a condition of acidosis, wlid delirium and a maniacal state for ten days following the operation and final dissolution.

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TREATMENT OF APPENDICULAR ABSCESS.

BY

W. A. B. SELLMAN, M. D.,

Baltimore, Md.

WE are very uncertain why these abscesses develop. Many of the cases present few or no symptoms until within a few hours previous to the operation. Many of them are performing their usual duties or are engaged in the work pertaining to their vocations before calling upon a physician for the relief of mild abdominal uneasiness, or have had only a slight rise in temperature.

A recent case presented merely slight symptoms attributed to indigestion. At 3.00 P. M. when called in consultation by the family physician, there was no pain elicited upon pressure in the right abdominal region. At 5.00 P. M. a temperature of 104° F. developed. She arrived at the Hospital at 8.00 P. M. When the abdomen was opened at 10.00 P. M. an enormous appendicular abscess was found, opened and thoroughly evacuated. The appendix was swollen and tied down by adhesions. It was not removed. Three cigarette drains were introduced, one within and at the bottom of the abscess sac, one above, and one below the sac. The drains were allowed to remain six to eight days and then withdrawn. The wound was cleansed with dilute peroxide solution until healing took place from the bottom. The patient returned home at the end of three weeks. She has been perfectly well since that time and able to look after her household duties.

The description is typical of many of these cases. Whether a secondary operation will be required for the removal of the appendix is uncertain. We have patients in whom a period of five to eight years has passed since the evacuation of large abscesses and no symptoms have developed which would suggest a secondary operation. These cases did not present a history of traumatism or of acute indigestion. The gall-bladder, nose, throat and teeth were normal. In a word, there were no apparent foci of infection.

A most common complication with appendicitis is the occurrence of circumscribed purulent peritonitis and suppuration in the adjacent retroperitoneal tissue. We frequently have gangrene and perhaps perforation, but not necessarily so.

We can frequently locate the position of the appendicular abscess by recognizing a swelling over the site of the collection of pus. In

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these cases we do not adhere to the McBurney point for incision. If, upon opening the abdomen, we find that the purulent fluid is encapsulated, we pack around the abscess with a gauze towel and attempt to draw the sac out as far as it is safe to do without rupture. If the sac is located low down in the pelvis, it is advisable to make a stab-wound and drain from the most dependent portion. A drain is introduced in order to clear the sac of later accumulation of purulent fluid. A gauze towel is packed around the sac and the appendix brought up and removed. Many cases have been operated upon and drains placed high up and later it was required to make a stab-wound lower down to insure drainage of the abscess. Pus, which is allowed to remain, is liable to burrow into the rectum, vagina or bladder. This purulent fluid is liable to infect tissues which, when the operation was performed, were in a healthy condition. The finger should be introduced into the deepest portion of the sac and its limits defined. The cigarette drain is made use of. Iodoform gauze (10 per cent.), wrapped with thin rubber tissue, is the most efficient drainage that we can use. The rubber tissue should be wrapped around the gauze at least twice in order to prevent the purulent fluid infiltrating into the tissues through which it passes. The gauze should be fluffed at the ends and project 1 inch beyond the tissue. The end, which is brought out upon the abdomen, should be caught with a sterile safety pin. The number of drains depends upon the size of the abscess and the condition of the structures around it. Where we have a gangrenous appendix, three drains are usually introduced, one within the sac, one below, and one above.

The technic employed for the removal of the appendix is to seize the end of the organ with hemostatic forceps and to pass a small Cleveland needle under the appendix close to the cecum. A No. 2 catgut ligature is caught by the needle and drawn through, to be later used to tie off the appendix. A heavy hemostat grasps the organ three quarters of an inch from the cecum. The walls of the appendix are crushed half an inch from the cecum by another forceps. The ligature is now tied around the appendix, and the ends cut short. Lifting the distal end of the appendix, a No. 2 catgut suture is introduced into the mesoappendix in a position to catch the first artery. The tissue of the mesoappendix is then cut close to the appendix to a point near second artery. Another stitch is placed around this vessel and the mesoappendix cut again. This is repeated until the cecum is reached. A circular suture of fine silk threaded upon an intestinal needle is placed in the cecum below where the appendix is inserted. This suture is allowed to remain loose. The appendix is

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now cut through at the point where its walls have been crushed. This may be done with cautery or the knife. If cut through by knife, the raw edge should be touched with carbolic acid and neutralized with alcohol. A small Halstead forceps is placed upon each side of the cecum at the point where we intend to turn in the appendix. The end of the appendix is pressed or inverted into the cecum by pressing gently with small forceps. The circular suture is now tied sufficiently tight to hold the appendix within the bowel. With one end of the circular suture passed into the serous membrane, the inverted appendix is sewed in and the raw surfaces are covered up. This prevents future adhesions taking place. All instruments and sponges are now removed and the wound wiped out with gauze sponges moistened with saline solution. The abdominal wound is closed in the usual manner, or, if conditions require, the drains are inserted. The patient should be placed in bed in the Fowler position and proctoclysis commenced at once. We favor the use of warm soda solution in preference to the saline. Its use is maintained until danger of shock has passed. Rubber tissue, thoroughly dried, should be placed upon the skin to protect it from the moisture oozing out of the drainage tubes; fluff gauze and an abdominal pad adjusted, held in position by a many-tailed bandage, lightly fastened. A tight bandage makes the patient very uncomfortable. Unless discharge appears through the dressings, they are not disturbed in drainage cases until the third day. The fluff gauze is changed, and any pus present expressed from the drains by a pumping motion of the gloved hand. Fresh pads are adjusted and the bandage made comfortably tight. Do not attempt to withdraw the drains until certain that the pus has been evacuated or no more can be accomplished by their presence. After the eighth day, if the purulent fluid continues to flow freely, the lower drain may be removed in order to give free vent for the discharges. Later, according to the judgment of the surgeon, the remaining drains may be removed or replaced and irrigation made use of to clear the wound and sac of any purulent material that may remain. We frequently employ a solution of iodine (one part of the tincture to three parts of alcohol or water). A solution of carbolic acid frequently proves stimulating to the development of healthy granulation.

At times the bowel is so gangrenous that small fecal fistula develop. These frequently close without treatment. If large, it may be required to reopen the abdomen and suture the openings or perhaps perform resection of the intestine.

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In conclusion: the important features in the treatment of appendicular abscess are:

First.—To bring the sac up and wall it off so that the purulent fluid may not infect the surrounding tissues; to secure drainage after being emptied at its most dependent portion; to prevent choking and obstruction of these drains.

Second.—Protect the healthy parts by using rubber tissue around drains and upon the skin around the abdominal wound. Change the fluff gauze whenever it has become saturated with the discharges. Do not withdraw drains until satisfied that they have accomplished all that can be secured by their use.

Third.—Stimulate granulation and destroy pyogenic tissues by irrigation. Keep the patient in the most favorable position to secure drainage.

Fourth.—If we find the appendix and intestines showing evidence of gangrene and the patient is threatened with shock, refrain from removing the appendix, as many of these cases recover, whereas if the operation is prolonged, they die. In the majority of cases no post-operative symptoms develop. We have patients who have been operated upon five to eight years ago without their developing any indication for a secondary operation. Experienced surgeons have claimed that 10 per cent. require a secondary operation. Our experience does not coincide with these statistics.

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LEFT-SIDED APPENDICITIS IN *SITUS INVERSUS VISCERUM TOTALIS.*

BY

J. H. JACOBSON, M. D., F. A. C. S.,

Toledo, Ohio.

IT is not at all infrequent to find a vermiform appendix in a situation other than the classical one at McBurney's point. Such abnormalities of position are, as a rule, associated with normal or typical positions of the other organs in the abdominal cavity. It is well known that the appendix may be found in any position along the course of the large intestine, due to arrested or faulty rotation of the cecum during fetal life. An abnormally long appendix, with mobile cecum, may be found in the pelvis or even well on the left side of the abdominal cavity.

An appendix may also be greatly displaced by abdominal tumors. When an appendix becomes inflamed in such cases, the clinical manifestations may appear entirely on the left side of the abdomen, making the diagnosis difficult. Such cases, however, are not true cases of left-sided appendicitis. Genuine cases of left-sided appendicitis are, strictly speaking, those associated with transposition of the abdominal viscera. My attention was called to this unusual condition by the following experience:

In May, 1916, I was called to a farmhouse by Dr. Babione, of Luckey, Ohio. The patient, a young man, aged twenty-four, was suffering from an acute abdominal condition. The illness was of three days duration, beginning with severe pain, which soon became localized over the left lower part of the abdomen; there had been severe vomiting and fever. Since the onset of the present illness urination had been frequent. The patient stated that he had occasionally in the past had attacks of abdominal pain.

On examination the abdomen was found distended and rigid, especially over the lower part of the left rectus muscle; the pulse was 125; temperature 104.2°F.; the patient was suffering intensely. There was a tympanitic note over the right hypochondriac region, the clinical picture being one of an acute abdominal visceral perforation. Examination of the urine was negative. In the course of the physical examination the attending physician stated that a number of years ago the patient had been told that his heart was on his right instead of on the left side of his chest. Up to

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this time the diagnosis was more or less obscure; the continued examination quickly revealed the dextro-cardia and the hepatic dullness in the left hypochondriac region. A diagnosis of left-sided appendicitis was accordingly made.

An incision was made through the left rectus muscle at a point corresponding to McBurney's on the right side. On opening the abdominal cavity a large amount of free pus was sponged out and very dense adhesions of the small intestines in the pelvic cavity were encountered. The density and firm organization of these adhesions was undeniably the result of previous inflammatory attacks. A perforated and gangrenous appendix was found hanging over into the pelvic cavity and attached to the left side of the pelvic wall, which was removed and a large tube and gauze drain placed in the pelvis. The post-operative treatment was by the Fowler-Murphy method. The patient made an uneventful recovery.

Three weeks later he developed severe abdominal pain and distention. I was again called and found him suffering from intestinal obstruction. The abdomen was opened and a dense obstruction found in the small intestine as a result of adhesions in the pelvic cavity. A lateral anastomosis by the suture method was made, but without avail, the patient succumbing on the following day.

My experience in this case led me to review the literature on appendicitis associated with visceral transposition. I found eleven other cases, and with the case which I herewith report, there are in all twelve cases, as shown in the following summary:

CASE I.—DREYER, W.—*Hospitalstidende* (Copenhagen), 1883, 3 R. 1:4. Female, aged thirty-four. Slight appendicular peritonitis in left hypochondrial region; vomiting and constipation. Palpation showed complete visceral transposition. Heart and spleen on right and liver on left, side. Operation not stated. The author says that the tenderness and resistance on left side of abdomen were due to a mild appendicular peritonitis.

CASE II.—BREGI.—*Med. Mod.*, 1897, viii, 643. Male, aged twenty-three. Fell in gymnasium, pain in left iliac fossa, no stools; no gas; no anuria; abdomen painful, walls contracted; rapid pulse; vomiting; extremities cold. Intestinal occlusion with peritonitis. No operation. Died two days after injury. Autopsy showed inversion of viscera; peritoneum filled with pus. In left iliac fossa cecum adherent to wall and the appendix outside and behind it with violet colored extremity, size of little finger. Ecchymotic inflammation of cellular tissue of iliac fossa where appendix rested. Appendix fixed by adhesions. Total situs inversus.

CASE III.—RATHKOWSKY.—*Berlin klin. Wchnschr.*, 1899, xxxvi, 263. Male, age not stated. Recedent left-sided attacks. Symptoms referred to left iliac region; circumscribed peritonitis. Symptoms had persisted since sixth year. Resembled chronic appendicitis, left-sided. No operation. Palpation disclosed total situs inversus.

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CASE IV.—HEBBLETHWAITE, H.—*British Medical Journal*, 1907, ii, 1579. Male, aged sixteen. Abdominal troubles. The probable transposition of the appendix into the left iliac fossa led to the suspicion that that organ was the seat of the abdominal troubles. Treated expectantly but as symptoms continued was operated. Result, recovery. Transposition of abdominal viscera found at operation. In left side abscess and gangrenous appendix.

CASE V.—LATZEL, R.—*Situs inversus viscerum* und Toxische Nephritis und Cystitis im Anschluss an Appendicitis. *Mitt. a. d. Geselschr. f. inn. Med. u. Kinderheil k., Wien.*, 1908, vii, 118. Male, aged twenty-two. Good health till 1907, then cough, gastroenteritis, etc. April, 1908, abdominal symptoms of appendicitis; diarrhea, vomiting and pain especially on left side. Palpation showed situs inversus, which was confirmed by *x*-ray. Simultaneous appendicitis and nephritis. Treated medically. Result, not stated. Clinical demonstration of patient only.

CASE VI.—POOL, E. H.—Complete Transposition of Viscera in a Case of Diffuse Appendiceal Peritonitis. *Annals of Surg.*, 1912, lvi, 940. Male, aged fourteen. Abdominal pain, vomiting. Pain in left lower quadrant. Diffuse peritonitis, appendix probable cause. Abdomen opened in right lower quadrant. Appendix not found. Opening extended. Sigmoid recognized. Visceral transposition suspected. Verified by making incision in left side. Appendix found. Result, recovery. *X*-ray showed complete thoracic and abdominal situs inversus.

CASE VII.—MÜHSAM, R. *Berlin klin. Wchnschr.*, 1911, xlviii, 1399. Male, aged twenty-one. Acute abdominal pains. Left-sided appendicitis (Mosse). Operated by Mühsam with left-sided incision; organs demonstrated totally reversed. Result, recovery. Inversion of viscera known for fifteen years previously, which was established by Röntgen-ray and palpation. Patient shown at Society Meeting.

CASE VIII.—HOLLENBACH, F.—Ein Fall im Appendicitis bei *Situs Inversus Totalis*. *Deut. Med. Wchnschr.*, 1912, xxxviii, 850. Female, aged twenty-eight. Pains in left side at point corresponding to McBurney's point on right. Vomiting. *X*-ray examination demonstrated complete intransposition of viscera. Diagnosed after *x*-ray examination as left-sided appendicitis. Typical appendicitis operation. Left-sided incision. Transposition verified. Cecum and appendix on left side. Result, recovery. Patient had operation for floating kidney in 1907, and a ventrofixation in 1908, also a right oophorectomy. During none of these was inversion of organs discovered.

CASE IX.—PODEVIN, P. and DUFOUR, H.—Appendicite chronique à gauche inversion totale des organs. *Bull. et mém. Soc. méd. d. Hôp.*, Paris, 1913, xxxv, 215. Female, aged forty-two. Pains in left side at point corresponding to McBurney's point on right. Palpation, bismuth meal and radiograph demonstrated complete inversion of visceræ of thoracic and pelvic regions. Chronic appen-

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dicitis. Not operated upon. Author says if operation is necessary, left side must be opened.

CASE X.—THIERRY, P.—Un cas d'erreur de diagnostic dû à une inversion viscerale totale. *Bull. et mêm. Soc. de chir.*, Paris, 1914, xl, 1001. Male, aged twenty-four. Two months of abdominal pains in right side (iliac fossa); vomiting later. Appendicitis. Appendix not found, but colon. Examination showed sigmoid was being dealt with, operation not further proceeded with. Subsequent radiography, etc., showed complete inversion of visceræ.

CASE XI.—REID.—*Edinburgh Med. Jour.*, 1836, xlvi. Male, aged seventeen. Colic and other abdominal pains. Case described as death due to ileus. No operation. Result, died. Autopsy showed that all of large intestine was in the left iliac fossa. "The small intestines occupy that part in the abdomen where the large intestines are usually placed." Author does not mention other organs.

CASE XII.—JACOBSON, J. H.—*Transactions American Association of Obst. & Gyn.*, 1917, and present publication. Male, aged twenty-four. Illness three days' duration; general abdominal pain, becoming localized on left side. Urinary disturbances. Temperature 104.2, pulse 125. Rigidity of left rectus muscle. Diagnosis made from previous history of dextrocardia. Liver dulness on left side; classical history of appendicitis. Left rectus incision. Free pus in abdominal cavity, adhesions of small intestines in pelvic cavity. Acute gangrenous and perforated appendix removed. Result, died three weeks later of intestinal obstruction. Recovery from primary operation. Death due to intestinal obstruction from intestinal adhesions on the twenty-first day.

In an analysis of these cases it will be seen that in only three, which includes my own, was the diagnosis made previous to the operation and the appendix removed through an incision made deliberately in the left side of the abdomen. In three instances the condition was unsuspected and diagnosis made only after the abdominal cavity had been opened; in four cases a clinical diagnosis was made and the patient treated medically, no operation being performed. In the remaining two cases the condition was found only at autopsy.

It appears that Mühsam (in 1911) was the first to report an operation deliberately planned for left-sided appendicitis in the *situs viscerum inversus totalis;* Hollenbeck in 1912 reported the second, and my own case seems to have been the third. In Mühsam's case the transposition of the viscera was known for fifteen years before operation. Hollenbeck's case was diagnosed previous to operation by the *x*-ray; in my case the transposition of the abdominal organs was unknown before operation.

In all cases reported there appears to have been a history of

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previous attacks of abdominal pain. This leads to the conclusion that the condition was unsuspected, otherwise an early operation would have been done. It is difficult to ascertain the frequency of *situs viscerum inversus;* it is significant that up to 1906 Sorge(1) was able to collect only 214 cases. According to that author, the first *x*-ray picture of a case of visceral transposition was published by Vehemeyer in the *Deutsche Medizinische Wochenschrift* in 1897. The diagnosis of *situs inversus* is, as a rule, easy when a careful and thorough physical examination is made. It has, however, been made much easier by the *x*-ray. I have been informed by roentgenologists of experience, that dextrocardiac and visceral transposition are not exceedingly rare, as was formerly supposed.

Transposition of the abdominal viscera has led to a number of errors in diagnosis other than that of appendicitis; thus Arniell(2) refers to a diagnosis of inflammation of the liver on account of pain in the right hypochondriac region diagnosed as a wound of the liver; another was a spleen tumor, on account of the liver enlargement in the left hypochondriac region, and to a case of cancer of the pylorus diagnosed as a cancer of the pancreas.

It is fair to assume that with the increasing frequency of *x*-ray examinations, especially fluoroscopic examinations of the chest and digestive tract, a diagnosis of *situs inversus* will be more frequent. From the fact that acute abdominal diseases in such individuals are difficult of recognition, these patients should be carefully instructed so that in the event of an acute abdominal condition they may aid the physician in arriving at a proper diagnosis.

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DISCUSSION ON THE PAPERS OF DRS. SELLMAN AND JACOBSON.

DR. ROBERT T. MORRIS, New York.—When I was full of enthusiasm and energy I used to distinguish between two kinds of appendicitis. First, irritative lesions of the appendix which do not go on to suppuration. Second, infective lesions which produce adhesions. When I was full of enthusiasm and energy I used to separate these adhesions and make earnest efforts to remove the appendix. I did a lot of work for my patients that I would not now do. I have begun to take things in life easier and incidentally I find that operative work is included. This makes things more com-

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fortable for my patients as they get well better than they did in my days of youthful vigor.

My idea in not walling off the appendix with gauze depends upon the fact that most of this pus is sterile. It is an albuminous fluid, and if you should leave a little of it in the peritoneal cavity it may help to nourish the patient. Don't bother to wall off the pus with gauze; take out the major part of it. The bacteria are at work in the tissues, not in the pus. If you should spread the pus over the peritoneum it will do less harm than would be done by walling, wiping and flushing. That severe work belongs to the pathologic era of surgery where we think we must do the work of nature ourselves; but now, when we have advanced to the physiologic era we should turn the patient over to himself. When a doctor washes the peritoneum and does all this elaborate work he is usurping the function of the Lord and the patient. Don't do it. Turn the patient over to himself and give him home rule. That is the trick. If you find it is going to cost the patient a good deal to get the appendix out, not financially, but in relation to his general condition, don't do it. Open the abscess and establish drainage quickly, then stop. The modern idea is to get in and get out as quickly as you can. If the appendix makes trouble subsequently, step in and make trouble for the patient again. The method will work out better than that as a rule. You can always tell if an appendix that is left in is making trouble by two signs; the right sympathetic lumbar ganglion is hypersensitive on pressure. When it is hypersensitive alone the appendix is making trouble. The next sign is distention of the ascending colon due to tiring out of the muscularis. By these two signs you can tell whether it is making trouble or not.

With regard to leaving forceps on a stump instead of ligating the same, I do that in some cases to save time. Take the forceps off the next day. It is less trouble than to ligate. You can do the forceps trick in one minute. Instead of getting head over heels in the abdomen, look in and see where the stump of the appendix is, snap on the forceps and take them off the next day. A fecal fistula will not often form and when it does it will close spontaneously.

So far as the artery is concerned, you do not need to ligate it very often, because endarteritis has, for the most part, disposed of the same.

I do not depend upon a wick drain in all cases; I suck out the fluid by introducing an additional fluff of gauze at times. I have not used adventitious drains for years. (Here Dr. Morris explained and demonstrated on the blackboard the technic of his method of dealing with the appendix.)

Dr. Gordon K. Dickinson, Jersey City, N. J.—It takes temerity to follow Dr. Morris. I did not hear Dr. Jacobson's paper much as I wanted to. But with reference to the first paper by Dr. Sellman, if you will take the most excellent work of Lockwood, of London, on appendicitis, you will find that he makes sections for the microscopist and reports on every case. He looks upon many of these

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cases of appendicitis as being due to lymphangitis and that the first abscess points. The first place where you have evidence of infection outside of the lymph stream is at the mesentery. That is where the parts are weak. The abscesses are prone to grow, yet you will find the appendix has healed over and is absolutely normal except in a section. Hutchinson has written an excellent work on the anatomy of the peritoneum in which he shows that the artery that goes to the base of the appendix frequently supplies the cecum, and most any of the pathology which exists around and in the base of the appendix also exists in the cecum. For the last five or six years I have removed the tip of the cecum with the appendix for the same reason that you do not amputate a diseased tube and leave the infected stump to go into the fundus of the uterus; therefore you should resect a portion of the cecum.

I do not believe we should drain. The omentum drains. The peritoneum may play a part in some drainage, but the surgeon does not drain. You put in a plug, you make a path of least resistance for pus and serum to come out later. You produce irritation which brings out lymph and walls off. You dam the process, but you do not drain it.

Dr. J. Henry Carstens, Detroit.—I think Dr. Morris has cleared up the whole thing when he says that we always try to do too much. That is the great trouble. We go too far inward in opening the abdomen in these appendicular abscesses, instead of going away over on the side. A great many of these appendicular abscesses are postcecal. The appendix points upward and is back of the cecum, and all we have to do is to go in from the outside, dig down, separate the muscles in different directions, making a small incision, finally strike the abscess cavity, and the operation is finished in about five minutes. Then you insert a little rubber drainage tube. We should not insert the gauze type of rubber drainage tube because gauze plugs up. It does not drain more than twelve hours. The capillarity ceases because it is filled and you have to pull the gauze out. This hurts because the gauze is adherent. I insert a small rubber tube one-third of an inch thick and I do not use any stitches. Sometimes I put in silkworm-gut stitches on each side of the tube and make an incision one and a half to three-quarters of an inch long, and that is all. I let it alone and nature will do the rest. Some operators make an incision pretty nearly in the middle of the abdomen, get into the abdominal cavity, cut the peritoneum in front and behind, in order to get into the pus sac, and many of their patients have septic peritonitis and die. If the operation is done the other way, very few of them die and in very few cases will the appendix cause any trouble in the future. If you can remove the appendix, tie it off; if you cannot tie it off, cut it off. If there is any hemorrhage, put on a clamp, but as a general rule you do not need to do anything but trust to the *vis medicatrix naturæ*. Nature knows a good deal more than most of us.

Dr. Charles L. Bonifield, Cincinnati.—A few years ago we all talked about draining and leaving the appendix alone, later

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we talked about getting the appendix out in every instance, and now we are talking about draining again. Personally, I think Dr. Morris and Dr. Carstens have regarded the matter in too broad a way. When they say very few appendices give trouble afterward and their patients remain well, I must answer that their experience has been different from mine. Their patients do not always come back to them but go to somebody else and get their appendices taken out. I have had that happen dozens of times. When I take out the appendix I find my patients get well and that satisfies me. I remember one case in particular in Indiana some years ago, on which the late Dr. Reamy operated when I was his assistant. He simply cut in and evacuated the abscess. A year later there was just as big an abscess as before. I took out the appendix. In the meantime, the patient took up Christian Science and said the Lord had cured him.

DR. ALBERT GOLDSPOHN, Chicago.—Regarding the anomalous position of the appendix, I have had this experience: in two instances I had to search up to the region of the hepatic flexure of the colon to get the appendix out, and in a case I operated on about a week ago I had to go about half that far and take out an appendix 7 inches long that was wholly retrocecal, a rather difficult thing to do.

As to the technic of operating for the removal of the appendix; I think that the mode of approaching it varies with the pathology. The ordinary chronic or interval type of appendix is a very simple affair and we ought to be able to take it out through an opening in the abdominal wall that is cut only through the skin and superficial fascia and stretched large enough through the muscles to do the work there after the McBurney technic.

In acute cases usually of two or four days' standing, with an appendix gangrenous or nearly so, with peritonitis or a purulent exudate not diffusely disseminated, I make a generous incision preferably through the right rectus, drain generously with small gauze ropes placed one into the pelvis, one into the loin and one or more toward the median line as may be needed. These are not wholly covered by rubber tissue and the wound is sutured very little so as to afford the best possible drainage. Proper closure of the wound is made later when life is no longer in danger. In a case similarly or further advanced and with a rather general peritonitis present, I make, in addition to the incision last mentioned, a small one on the left side and place a rubber tube through both openings down into the true pelvis, supplemented for about forty-eight hours by gauze drains in or about the tubes. The patient is put in a moderate Fowler position. For cases with a circumscribed abscess, I make an incision as if for ligating the external iliac artery and proceed extraperitoneally, lifting the parietal peritoneum until it breaks usually at a friable spot nearest the abscess, which is then entered and drained largely by gravity without free peritoneal surfaces coming into view or contact. In these cases likewise, I have nearly always been able to find the

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appendix or remnants of it upon the abscess wall and have removed it without breaking down the latter. The after-treatment in these cases was usually very gratifying, particularly as compared with the waiting and fasting treatment, which generally means a secondary operation. As for amputation of the simple or chronic appendix without an infiltrated friable wall, I contend that it should be done without using any chemical antiseptic. I squeeze out the mucosa from the segment of appendix in which the amputation is to be made. The stump then embraces only the muscular and serous coats and can safely be buried without antiseptic treatment. Chemical antiseptics reduce the ability of the treated tissues to overcome the germs that are not and cannot be claimed to be killed by any such chemical cauterization. In cases where infiltration of the appendix walls makes this technic inadvisable, the Paquelin cautery is the correct thing to use.

DR. JOSEPH H. BRANHAM, Baltimore.—I agree with Dr. Bonifield that we should remove the appendix if we can do it without considerable damage to the wall of the cavity. It is not a good idea to leave an appendix and depend upon nature to take care of it afterward.

Taking out the gall-bladder without drainage is a point that Dr. Morris touched on. I heard Dr. Finney read his paper when he described an operation of this kind; that he waited for a long time for a suitable case. Thereafter it was done by a great many surgeons, and the cases were successful at the time they were reported. If, after tying the cystic duct, it opens in 10 per cent. of the cases, it is because it has not been tied off properly. After you have dissected out the cystic duct and the gall-bladder, and get the duct thoroughly out in the peritoneal cavity, then crush it as you would an appendix. You must crush it thoroughly so as to destroy everything except the muscular layer. If you tie it off carefully and cover it with peritoneum, it will not reopen unless there is some diseased condition in the other duct that obstructs the flow of bile and forces it back. If you look carefully for a diseased condition which will make such pressure on the bile duct, you will not have it open. A great many surgeons have done this operation for a longer time than I have, and I have not heard of any who had a reopening of the duct where the operation was done in suitable cases.

DR. SELLMAN (closing the discussion on his part).—In regard to the claim of Dr. Carstens that most of the abscesses occur in the mesentery rather than in the appendix itself or other tissues, that is true, because we are unable to find the mesentery in these bad cases when we operate.

In regard to the use of rubber drainage tubes, I think it is a very important question for us to decide if possible, whether it is better to use rubber drainage or gauze and rubber tissue. Dr. Carstens claims that he does not like the contact of the tissues with the gauze. All my drainage gauze I surround with rubber tissue; I make a rubber drainage tube and I dwelt especially on rubber tissue wrapped around the gauze. I am as much opposed

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to the presence of gauze in contact with healthy tissue as any one else. We are likely to carry infection; we not infrequently infect healthy tissue by the use of drains, but with a cigarette drain, wrapped with rubber tissue, I have not seen infection.

The number of drains are a matter of individual judgment. I was brought up under one of the nestors of the profession, Dr. N. R. Smith, who achieved wonderful results in his time without any antiseptics or anything of the kind. I traveled over the country with him for a number of years and his results without antiseptics were wonderful, and he opened freely and drained. In the early days we used glass drain tubes, which I never use now, and I consider iodoform gauze, not too strong (10 per cent.), a very much more efficient means of draining these cases than the rubber drainage tube which becomes choked. What do we do with a rubber drainage tube before we introduce it? We cut small holes in it and very often these holes act as points of outlet for pus in portions of the drainage tract that were not infected. With a cigarette drain of gauze, wrapped with rubber tissue, none of these little holes are present and allow purulent material to come in contact with healthy tissue.

In regard to cutting off the appendix, I agree with the gentlemen who have discussed the paper, that the cautery is far superior to the knife and I have always been a little uncertain about introducing chemical caustics into the abdomen. But I do not consider that I introduce them into the abdomen; I simply touch the end of the appendix that is cut, the part that is projecting into the bowel, and the bowel will take care of any septic material at the end of the stump. I have often inverted the appendix, without tying, but I have always been uncertain about it.

Dr. Jacobson (closing the discussion).—I was much interested to know whether other members of the Association had had any experience with cases of left-sided appendicitis, or of transposition of the viscera.

Regarding some of the questions brought up in the discussion relative to the opening up of the cystic duct, it is one of the problems that was taken up in my paper. We do know that we open the cystic duct more frequently than is supposed and the percentage is larger than what Dr. Morris has stated here to-day, that is, 10 per cent. In these cases we also ligate by first crushing and using chromicized catgut in various ligatures to prevent the duct from opening. Personally, I do not know why some of them open up and why some do not.

Cholecystectomy should not be done without a drain being placed somewhere near the cystic duct to take care of this kind of complication should it arise.

With reference to the method of ligating the appendix and inverting the stump, I feel that any method which simply ligates the base of the appendix would be unsafe and should not be continued. I am certain that in some of these cases it happens that the ligature does not fit the thickness of the appendix and eventually cuts

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through, and in some instances peritonitis and death have resulted from this simple ligation of the appendix. It has been my practice for several years not only to put one purse-string but two, which I regard as a safe procedure to follow.

Regarding the treatment of cases of general sepsis and purulent peritonitis, it seems to me one thing should be used which has not been mentioned here to-day, and that is a good vacuum apparatus or suction pump. Since we have installed this as a regular routine in cases of acute perforation of the abdominal cavity, we can without any additional manipulation pass a suction tube into the pelvis and get a large quantity of pus which otherwise goes into the abdominal cavity, and have improved the results very much in these cases.

I also want to speak regarding the method advocated by Dr. Goldspohn, and that is, the extraperitoneal method of opening up the appendicular abscess, or, as he puts it, through the same incision as for ligating the internal iliac vessel. I am sure that is a good procedure, one that can easily be carried out and will do away with the expectant treatment, such as Ochsner has given us and shorten the convalescence and save many patients a good deal of suffering.

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THE DUCTLESS GLANDS IN OBSTETRICS AND GYNECOLOGY.

BY

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I HOPE in this paper to go into no extended discussion of the physiological action of the various secretory glands of the body. Although we are yet in the early stages of our knowledge, in a general way their action is known. I simply hope to put in a few words the uses I make of the internal secretory products and the conditions for which I employ them.

It must be remembered that some glands underact, and the primary condition rests with them; on the other hand, one gland may be inhibited by the overactivity or underactivity of some other gland. This explains the difference in action or of administration of drugs in many cases of apparently the same nature. If the thyroid or ovary, for instance, is underacting and the condition is primary, we obtain splendid results by the administration of either the thyroid or the ovarian gland extract.

Of all the conditions in which we actively use extracts, the hyposecretion of the thyroid is most readily overcome at all periods of life. Whether in infancy, adolescence, puberty or during the menstrual life, or after the climacteric, it is followed by the most brilliant results, if given early enough and long enough. I have brought peace of mind, sanity and renewed physical vigor to many a depressed, melancholy and prematurely aged woman by the persistent use of thyroid extract. I have restored menstruation, overcome sterility and prevented repeated abortion by its use. The administration of ovarian extract supplies most of what is needed by the body for the stimulation of menstruation. This is not the case with many of the other gland extracts, nor is it always the case with the ovary, for even if we give the whole gland, there seem often to be lacking some of the products of which we are in need.

Valuable as are ovarian extract and corpus luteum for avoiding or diminishing flushes, there are certain cases, probably pluriglandular, where no amelioration is obtained, especially if the

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annoyance is well-developed before we begin treatment. These neglected cases will not yield to thyroid, ovarian or corpus luteum extract. The vast majority are benefited. In many cases we accomplish a cure but not in all.

Any operative procedure, which is followed by a cessation of menstruation, should be followed by the continued administration of ovarian extract and corpus luteum extract to avoid the onset of severe flushes and flashes. In the huge majority of these cases, no marked untoward results ensue.

If the ovary is underactive and the primary condition rests there, we get an excellent result by the administration of corpus luteum extract, or particularly ovarian extract. This is well exemplified in lactation atrophy, where the simple substitution of ovarian extract will stimulate the ovary and supply what the system needs and restore menstruation within, relatively, a short space of time. Cases of relative amenorrhea, cases of late development of menstruation in young girls, or exceedingly scanty menstruation in this type of cases, are benefited remarkably by the administration of thyroid extract and pituitrin combined with the ovarian or corpus luteum extract. I believe that the pituitary gland is markedly associated with the process of menstruation. On the other hand, if the ovary is underactive because it is inhibited by the hyperactivity of some other glands of the body, then the condition is not so readily remedied. When several glands are at fault and their allied interactivity is the cause of the upset, of course the trouble is much more difficult to diagnose and to treat. This is the case with dystrophia adiposa genitaila, and we have to substitute not only ovarian extract, but thyroid and pituitary extracts. We seek to discover and to regulate the gland which is inhibiting the ovary, for instance.

When we come to the opposite extreme, overactivity on the part of a gland, then we are confronted with the problem of substituting gland extracts opposed to the activity of the gland whose overactivity we are trying to correct. This problem is very complicated, not so ready of solution, and the results are by no means encouraging and certainly not so permanent.

Obesity furnishes an interesting test for thyroid extract. In some cases small doses of half a grain, three times a day, or, at most, five grains a day, will cause a remarkable reduction in weight. In other cases even the larger doses have absolutely no effect on body weight, resulting only in headache and depression. The most difficult class of patients is that known as dystrophia adiposa

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genitalia. Patients come to us for diminished menstruation and for sterility. I have learned to treat them for the sterility by the administration of ovarian extract and thyroid extract with pituitary gland extract. I also give them hypodermics. These patients are given hypodermics, three times a week, of corpus luteum extract and pituitrin, five minims. This is continued for weeks at a time. The effect of this therapy is bound to be enhanced if a glass stem pessary is introduced, sewn into the cervix and allowed to remain there for several months. These patients then menstruate for four or five days, where formerly they menstruated for half a day or a day.

As regards the sterility itself, these cases are not promising by any means. The same method is followed more successfully in other cases of sterility; that is, the administration of ovarian extract, thyroid extract and pituitary extract accompanied by hypodermics of pituitrin and adrenalin, or pituitrin and corpus luteum.

The study of sterility has convinced me that we are on the wrong track in a very large proportion of cases. If spermatozoa are present, if the uterus and adnexa are normal so far as we can find, if inflammation is excluded, operations on the cervix and the uterus are not the essential procedures to follow in a large proportion of cases. In these cases ovulation does not take place. Ripe ova are not produced very often because the ovary is below normal in its development and often because it is filled with corpus luteum cysts and atresic follicles which prevent the ripening and bursting of the monthly follicle. Therefore, the proper method is to follow for several months the procedure which I have outlined, and if then no success be had, I advise an abdominal operation for making the ovaries normal; that is, the ovaries are split in two, all the retained corpus luteum bodies and the atresic follicles are removed, and the ovary is carefully resewn. I have had several remarkable results in this type of case, and I now conclude that we should consider cases of sterility in more than half of the instances as cases of "Higher Up Pathology," that is, higher than the cervix and the uterus.

In gynecology we are fortunately often dealing with gland upsets which are temporary in many instances. They, therefore, yield to treatment. On the other hand, the problem is a stubborn one when the upset is a more stable one, one which is dependent upon a hereditary constitution, or a marked involvement of any one gland as a sequel to inflammation or intestinal changes of a nature which we do not yet understand.

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In giving gland extracts for any of the nervous upsets which are due to glandular overactivity or underactivity, we should by no means overlook the value of bromides, the glycerophosphates, chloral and hypnotics. They are absolutely essential so far and probably will be for all time. They are fixed permanently in the pharmacopeia and I doubt, if ever, they can be displaced by any combination of gland extracts.

In the nervous conditions associated with gynecology, hyperthyroidism is a frequent causation. A careful study of the pulse-rate is of the greatest help. A carefu study of the symptoms, digestive and otherwise, leads us inevitably to this conclusion. Diagnosis is definitely settled in many instances by the administration of thyroid extract, which even in small doses markedly intensifies the symptoms. The administration of gland extracts for diagnosis is to be greatly valued. There are many pituitary cases, including those in which the pituitary is overactive and those in which it is underactive, in which the hypodermic administration of pituitrin with or without adrenalin, makes the diagnosis. The patient who is abnormally sensitive to a hypodermic injection of pituitrin, who grows pale, feels the contractions of the uterus, who becomes shaky, is certainly a hyperpituitary.

The thyroid and the pituitary gland are intimately concerned with the ovary. Affections of the ovary due to physical causes, sexual states affecting the ovary and thyroid and pituitary, lead to abnormal activity of these glands and are productive of most of the nervous states usually considered as caused by "reflex."

I am voicing the inward feeling promoted by close observation when I say that the definite solution by our society of the real importance of the phrase "reflex" in gynecological nomenclature is one of our most important duties.

My treatment of the nervous cases, in which the diagnosis is hypothyroidism, is to give them ovarian extract *plus* quinine hydrobromide, plus bromides or chloralimid. The symptoms are often markedly improved. Of course, with a local pelvic condition, especially with an abnormality of the ovary which irritates the thyroid, treatment is essential.

I have recently been trying the hypodermic use of pituitary extract and the internal administration of pituitary gland extract in these cases, and my opinion is that in many instances the combination works beautifully. This is an interesting field for further observation, and I trust that the future will clear up the question more definitely.

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In conditions marked by asthenia, adrenalin by hypodermic use, and especially the suprarenal extract by mouth, administered with whole gland of the pituitary for weeks and months will oftentimes bring about a remarkable result. Iron and arsenic, when indicated by anemia, are essential features in the treatment of this type of case, the arsenic being best administered by hypodermic in the form of cacodylate of soda (French). This line of treatment is followed by me in many, many cases postpartum. Many women take months before they recover their normal tone generally, and before the vagina, bladder and the pelvic structures have returned to the normal. I do not wait until months elapse and let the patient slowly run down hill before instituting the treatment. I begin this sort of treatment very shortly after the lying-in period is over, combining the general with local methods until the patient is restored as closely as possible to her previous status.

During pregnancy the placental gland is antagonized by most of the glands of the body. The presence of this secretory substance upsets interglandular relations during pregnancy till the body forces bring about a balance in the majority of cases. After labor the placental element is removed and the interglandular balance must again be regulated. Hence there follows in interglandular upsets of various sorts and often glandular exhaustion, an involvement of one or more or all of the ductless organs; hence hypothyroidism, more often hyperthyroidism, hypoadrenalism, pituitary anomalies, etc., cause physical and nervous changes of the most varied forms. The restoration of menstruation, nursing, etc., are added facts, and the wonder is that most women come out with flying colors.

Pregnancy and labor bring out latent weaknesses, very often constitutional, often hereditary.

In the menorrhagias of hypothyroidism thyroid extract acts very well.

In uterine bleeding, not due to a newgrowth in the uterus nor to overgrowth of the endometrium, we have in mammary gland extract and in thymus extract two excellent drugs. Thymus extract acts exceptionally well in the persistent menorrhagia of young unmarried girls. In the persistent bleeding around the menopause period, in the form of what is known as fibrosis uteri, it works exceedingly well, especially when combined with ergotine and stypticin.

After the vaginal operation for prolapse of the uterus, one out of eight or ten cases will show a persistent menorrhagia. In these cases thymus extract combined with ergotine and stypticin often are of the greatest value. There are certain cases of persistent

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menorrhagia, however, which drugs will not help, and here we may use horse serum to great advantage. If these methods and thorough curettage fail, of course a vaginal or an abdominal hysterectomy is the only procedure of value.

Much has been said of the value of mammary extract in large doses for fibroids of the uterus. In my hands, however, the method, while helpful in some cases, is not followed by very great benefit. I have had very excellent results in some instances with the *x*-ray method of treatment, tumors shrinking up and disappearing almost entirely and even if not, bleeding ceases absolutely and often menstruation is abolished. However, the surgery of these tumors is, after all, the ideal treatment, and I have no intention at present of giving up that method.

In the field of obstetrics, pituitrin by this time has met with great favor in the hands of many men, while others still fail to use it or are afraid to use it. I can only say that in my practice I have had no annoying results, and believe it to be the most valuable drug in obstetrics in any of the stages of labor. However, in the postpartum stage, I do not use pituitrin, giving either ergotole by mouth or aseptic ergot by needle immediately after the baby is born. As a result, I have had no postpartum hemorrhages, and am as devoted to the use of pituitrin as I have been heretofore.

I now try this drug with the added use of quinine and castor oil in all multigravidæ, giving it a few days before the expected period, and it is a very rare experience indeed that labor is not induced and does not go on normally within twenty-four hours. It has occasionally been tried on two succeeding days, but this has occurred in only a very small proportion of cases. So-called false labor pains will often be found by the use of pituitrin to be simply the preliminary labor pains, and in many cases where I have used it, the patients have gone promptly into labor and have saved days of waiting and uncertainty.

For the past few months I have been trying placental extract both by mouth and by hypodermic injection. Its use is never followed by any uncomfortable effects. If given by mouth or by needle or both, it has in many instances remarkable effect in diminishing the pain of menstruation known as dysmenorrhea. However, it does not effect a cure. It is better than many of the other gland preparations which I have tried for this purpose. In some instances of undeveloped uterus, if given by mouth and by needle, it seems to have a stimulative effect and to cause the uterus to grow larger. All these gland extracts, placental, ovarian, thyroid, pituitary, etc.,

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used for dysmenorrhea, or for hypoplasia, are not specific. I believe the pituitary gland has much to do with dysmenorrhea, and overaction of the pituitary gland at the menstrual period, when associated with the congestive action of the ovaries, will in many instances cause hypercontractions of the uterus and give us the uterine colic known as dysmenorrhea. The only permanent procedure of which I have any knowledge for the complete cure of uterine dysmenorrhea is the dilatation and discission of the cervix with the insertion of a glass stem pessary which is sewed into the cervix.

The value of placental extract in dysmenorrhea simply serves to call my attention to the rôle which the pituitary plays in that symptom, because I believe the placenta to be an antidote in a way to the pituitary gland, and I think that in the future by a study of this condition we may obtain good results in both the physical and mental symptoms of hyperpituitarism by the continued use of placental gland extract.

However far gland therapy may have gone, however far it may go in the future, I do not believe that we are by any means ready to throw aside the drugs which we have been using for years. And this brings me to one of the important points of the paper, namely, the fact that every gland extract administered therapeutically may have its value enhanced tremendously if we add to it one or other of the drugs which we have found by experience to be of value in the conditions with which we are confronted. When ovarian extract is given in relative or absolute amenorrhea, iron and arsenic are of the greatest value, having been given for years in these conditions before gland extracts came into our therapy. When we combine these two, we get an enhanced result. When thymus extract or mammary extract, for instance, is given to overcome excessive bleeding, its value is enhanced tremendously by giving in combination some of the drugs used formerly, such as calcium, stypticin, and particularly the various preparations of ergotole or ergotine.

By the administration of gland extracts, and by noting the consequent effect, noting the aggravation in the annoyances, we are often aided in diagnosis. From this standpoint, too, the value of the internal glands' extracts cannot be overlooked. Therefore, coming back to the subject of our paper, I believe that any well-informed physician must say that gland extracts have taken an important and invaluable place in medicine, if used properly, given in correct doses and for a sufficiently long period; that their activity can be enhanced by the co-administration of other drugs well tried and well tested.

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I believe that we have made a tremendous advance in the treatment of many conditions confronting us in gynecology and in obstetrics. There are certain conditions which we cannot unfortunately as yet correct, conditions due to overactivity of some of the internal glands, and this is the problem of the future.

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THE THYROID IN GYNECOLOGY.

BY

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I AM certain that no subject in recent years has received so much attention and provoked more scientific investigation than the endocrinic system of glands and no department of medicine has been more enriched by its possibilities than gynecology. The physiological chemistry of this little ductless gland, the thyroid, which when of normal size weighs only an ounce to an ounce and a half, but with a very rich and active blood supply, is exceedingly interesting. At first it was thought to be an organ with excretory functions, but now it is definitely settled that it provides, by its secreting cells, a product which gets into the circulation through the veins and lymphatics and influences the body metabolism, perhaps as an antitoxic, either by neutralizing and destroying certain poisons, the result of tissue change and disintegration from wear and tear, or by activating other interdependent glands, which go to make up the complex and complicated system, which is concerned in the elaborate functions of internal secretion.

In this short paper, it is my purpose to simply bring before you some of the conditions in the female, in which the administration of the dried extract of the sheep's gland is of signal value, without entering into a discussion of the deep and unsettled problems which are involved in the physiology and pathology of the many forms and expressions of goiter; of hypo- and hyperthyroidism, and other more or less ill-defined phases of physical instability, consequent upon an over- or under-activity of this gland.

In a paper read before the Obstetrical Society in Baltimore, in 1897, Dr. William M. Polk of New York called attention to the clinical effect of thyroid extract upon fibroid tumors of the uterus. His report was interesting and, in a measure, encouraging; but few of us ever gave the treatment any serious trial, because the mortality with the modern supravaginal operation is so low that most cases of fibroid tumor are operated upon, when the indications for treatment are called for; and, surely, none are more pressing for immediate relief than hemorrhage, with its exhausting distress and dangerous possibilities.

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In this connection, I have a very interesting case to report, not because I wish to recommend thyroid extract in the treatment of fibroid disease, but for the ill-determined hemorrhages in women, where the causes are obscure, until a diagnosis can be established and the best kind of subsequent treatment decided upon:

Mrs. S., aged forty-three years, three children, oldest thirteen, youngest five. She had always bled freely at her periods sometimes profusely, but for the past ten months, she was compelled to wear a napkin all the time because of the continuous dribbling and loss of blood. Sometimes she had to go to bed, as the hemorrhage was excessive. Her brother, a physician, sent her to a consultant, who prescribed thyroid extract and suggested a curettage for diagnostic purposes, and later more comprehensive surgery, if necessary. She did not take this good advice and continued to bleed until March, when I was called, as I had taken care of her in her two first confinements. I found her in a very nervous condition, very much swollen and puffy, extremely pale and anemic, with loud hemic murmurs and the usual symptoms and picture of prolonged and exhausting hemorrhages. Upon vaginal examination, the os was closed and the uterus in good position, apparently, not much larger than normal. A tentative diagnosis of a possible myxedema was made, and thyroid extract (Burroughs, Welcome & Company), in increasing doses, was given. At once the bleeding became less, strength began to return, and when after four weeks another vaginal examination was made, the os was found open and a myxomatous polyp, the size of a small plum, was protruding, which was easily removed without any anesthetic. The woman recovered very quickly and is now well, with good color, full of energy, and weighs 160 pounds. The thyroid in 2-grain doses was continued for some weeks with Blaud's mass, grains v, modified. I do not believe it was a mere coincidence that this polyp was found expressed during, but independent of, the thyroid treatment; because the bleeding was at once influenced and notably decreased after a few days of thyroid medication. She took 4 grains, three times a day.

The above case I have reported at length because of its pronounced and somewhat dramatic result, and yet I could detail a number of other encouraging experiences in the treatment of prolonged menstrual bleeding with thyroid therapy, when a previous curettage did not bring about the expected relief. Perhaps some of these cases were due to a general fibrosis of the uterus, or to some disturbed circulation in the organ, and not to a thickened and softened endometrium where curettage is usually effective.

In pelvic congestions, where the parts have a distinctly blue color, the cervix deeply ingested with blood, and the veins of the broad ligament distended and varicosed, with a general sagging of the pelvic contents, I always give thyroid extract, if tolerated, in

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conjunction with local scarification and depletion, hot douches, tamponage and cathartics. These women are often very constipated and the thyroid tablets act sometimes as a decided bowel stimulant and bring about two or more soft movements a day.

In the amenorrheas of young girls, where the periods are irregular or scanty, and even absent, or where the menstrual function has not appeared at the usual pubic period, I have of late years relied upon thyroid feeding, in gradually increasing doses; of course, in conjunction with good hygiene, proper living and exercise. Here I could detail the histories of many cases where menstruation was established after having been absent for months, or where marked irregularities existed, and normal function was brought about. It has been expressly valuable in those fat, pale, indolent, young women, who take little exercise and eat heartily especially of much sweet foods. Often when treatment was suspended, the irregularity would return, to be again relieved, both in time and amount of flow, by the administration of the thyroid.

A striking illustration of the potentiality of this remedy is seen in the following case:

M. J. aged twenty, and weighing 237 pounds. For some months she had been unwell for a day and instead of coming with regularity, would have her periods, say, at five weeks, or at six weeks, and then very scant in amount, but without any pain. For the past four months, she had seen nothing. She is of fairly good color, and still energetic in her work, but of late is depressed in spirits, and nervous and irritable. I gave her 1-grain tablets of thyroid three times a day and as she tolerated the dose well, I quickly increased them to 5 grains, and for a time 10 grains were taken three times a day. She saw her period at the proper time and was unwell five days, flowed freely, of good color, and without pain. She has continued the 5-grain tablet for months, and has been unwell regularly every month for over a year, and during the first six weeks lost 22 pounds in weight; but since that time there has been little appreciable loss, much to her discomfort and pardonable vanity, as she is a very handsome young woman, but with huge busts and hips, and as Locke would say, "deep-bosomed and broadbeamed."

Years ago, before I knew the value of the thyroid secretion in this class of cases, I curetted, inserted stem pessaries, gave electricity and other local treatments, but not with any degree of certainty and satisfaction, and perhaps often with harm to the unfortunate sufferer.

In the married, who have borne children, and who, after their first or second confinement, rapidly take on flesh and have a cor-

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responding lessened menstrual flow, and with a constipated condition of the bowels, I have seen most encouraging results under thyroid therapy, but, unfortunately, many women do not tolerate this preparation, but when they do, the flow increases, the bowels become regulated, and a general sense of well-being results. The best index as to the patient's toleration during thyroid medication is the pulse, which very soon, either by its rapidity or irregularity or intermittency, warns us either to discontinue the remedy or reduce the dose, but when not effected, the dose can often be as high as 10 grains three times a day. Intolerance to the drug is also shown by tremor of the hands.

It has sometimes been of signal service in reducing the large goiters of young girls and young women, especially at or near puberty. The natural secretion of the thyroid gland is a colloid substance and in these hyperplastic or parenchymatous goiters developed during the adolescent period, there is often an excess of this material thrown out. This overproduction seems to be stored up in the gland and produces considerable deformity, but its absorption seems to be promoted by the stimulation the gland receives from the thyroid medication, sometimes a rapid retrogression taking place in a few weeks.

In the goiters of older persons, where cysts have developed, and where the growth is adenomatous, like in the so-called *struma nodosum* of the Germans, very little depreciation in size is effected by medication; but here operative procedures are very satisfactory in the hands of capable operators, without any mortality, and practically no resulting scar or disfigurement.

Some individuals do not tolerate thyroid medication. It causes in them gastric irritability and diarrhea, indigestion, violent headaches, dizziness, nervousness, twitchings of the face and extremities, tachycardia and dyspnea. Perhaps some of these gastric symptoms are due to poor preparations containing ptomains and leucomains, the result of old and decomposed products. However, many persons show a great intolerance to even very small doses, and I have assumed that in some of them these symptoms and this oversensitiveness are really an indication of an already overacting and irritated thyroid, when the bromides and other sedatives are of great value.

Tuberculosis, heart lesions, albuminuria and glycosuria seem to be strong contraindications for thyroid feeding. It is a specific in myxedema and cretinism, and it is said to be of benefit in certain chronic skin diseases, as psoriasis, and of signal service in obesity

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in the pale and flabby type, with edema of the extremities, some cases of chlorosis, in combination with tonics of iron and arsenic. In the young and vigorous type of fat girl, it seems to have little effect in reducing the weight and size of the individual.

The loss of weight in suitable cases is thought to be brought about by the destruction of the nitrogenous tissues, and still more by the wasting of the carbohydrates of the body. Of course, other measures can be effectively employed here, such as the reduction of the intake of fluids and food, as well as active and vigorous walking and exercises of all kinds.

Some authors have had good success with thyroid in treating various neuroses, neurasthenia, melancholia and different types of mental disease; others have thought that the ingestion of thyroid increased the flow of milk in nursing women. Some have written on its good effects in threatened and repeated abortions, and I hope the discussion to-day will bring out your experience in these several fields of work.

The etiology and pathology of many diseases are still very obscure, the full functions of the glands concerned in internal secretion are certainly unknown and theories and guesses are simply hazarded to explain the results of treatment in various conditions. Perhaps the recital of another interesting case may lead to suggestive lines of study and investigation, which, in the end, may prove of great value:

Miss L., spinster, aged thirty-eight years, thin and anemic, with regular but excessive menstruation; three or four napkins a day for the first two days, and at least fifteen to twenty for the period. She consulted me on account of her hands and feet which were painful, the movement of the joints produced pain, the tips of the fingers were hot and tingled and the color was of a very deep blue which extended well up to the first phalanges. I made the diagnosis of Raynaud's disease, and sent her to Dr. Putnam, neurologist, who concurred in the diagnosis, and suggested nitroglycerin, $\frac{1}{100}$ grain, in gradually increasing doses. After a few weeks treatment, the medicine was discontinued; as there was no improvement and because it caused such distressing flushings of the face and disagreeable fullness in the head. I examined her thyroid and noted that it was unusually small and that the depression over the sternum was very deep; in fact, I could feel but very little gland substance. I decided to give her small doses of thyroid as an experiment and wrote a prescription for 1-grain tablets, (Burroughs, Welcome & Company), to be taken three times a day, with a very strict command that she return to me in a few days. The druggist, by mistake, gave her 5-grain tablets, which she took for four weeks, and then she came to my office because she was so nervous. She had a most distressed and anxious look and was

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breathing with difficulty; had a pulse of 130; the skin was cold and clammy; the muscles of the face twitched, and the hands and legs were jerked about in great restlessness. At once, I saw she was suffering from thyroid poisoning. The drug was stopped, and the toxic symptoms soon passed away. The discoloration of the hands and feet was so markedly improved, that I again sent her to Dr. Putnam, so that he might see what a pronounced change had been effected by the remedy. In a few days, I again commenced the thyroid in ½-grain doses three times a day, and then a grain was ordered, but this dose had to be again diminished on account of the developing nervous symptoms. The thyroid medication has been kept up for several months. The menstrual flow has decreased to a normal amount; the affected parts are pale, and the tingling stiffness and soreness of the digits have passed away. Both the hands and the feet are normal in color and function. She is still taking small doses of thyroid.

In my thirty-five years of practice, I have seen perhaps half a dozen cases of this somewhat rare disease and I confess that I have never known any medicine to influence its progress. All of the cases seemed to have gotten well, although some of them lost their nails and had superficial gangrenous areas, with sloughing. Of course, this one case is not sufficient to base any strong convictions upon as to the therapy of this disease, yet, I am convinced the thyroid was of signal value. It has suggested to my mind the possibility that there may be an explanation for Raynaud's gangrene in some disturbance of the glands of internal secretion, which causes the spasticity of the terminal vessels involved and by the administration of thyroid, a balance is brought about, so that the circulation in these terminal parts is restored to normal limits.

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INTERRELATIONSHIP OF FEMALE SEX GLANDS AND THE PITUITARY BODY.

BY

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DURING the past few years a mass of literature concerning the ductless glands has accumulated. One familiar with this literature is impressed by the fact that as yet the subject matter is concerned largely with theory. Facts are gradually being evolved by clinical study and experimentation, and each newly acquired fact affords another nucleus for further theory. These theories, however, serve the very useful purpose of directing thought and study and, as the facts become known the untenable theories will be displaced.

Of all the ductless glands, none has greater interest than the pituitary. As yet our knowledge of its physiology is fragmentary and the gaps must be filled in by theory. From this mass of fact and theory it would seem expedient that we begin to make some attempt to crystallize our knowledge clinically. The work of Cushing has done much in teaching us to recognize and understand the clinical manifestations of actual pituitary pathology. There is every reason to believe, however, that there are functional disturbances or lesser pathological conditions of the gland which we must and are beginning to recognize. Our attempts to study and explain the lesser pituitary dystrophies are still largely dependent upon theories and any discussion of the clinical side of the subject is of necessity more or less theoretical. The following is an attempt to call attention to certain clinical states that are apparently due to pituitary perversion, in the hope that in the further study of such cases, we shall be able to place them under proper classification.

Upon approaching the study of the ductless glands from any angle it must be clearly kept in mind that none of these glands acts entirely independently. The interrelationship is so close that disturbance of one gland will influence the secretion of one or more of the others. Hence the clinical manifestations presented are often very complex, indicating a perversion, not of one gland but of several. Correct diagnosis must then depend upon a most careful

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and searching analysis of the signs and symptoms presented. By this means only can the gland primarily at fault be determined and the possibility avoided of mistaking for the real offender a gland which is but secondarily involved. Further difficulties in the interpretation of symptoms lie in the fact that apparently similar active principles may be found in several different glands. For example, the blood raising principle that is present both in the pituitary and adrenals.

What is known of the physiology of the pituitary gland indicates that it is a gland of far-reaching influence upon many vital processes. The gland is divided both by its anatomy and physiology into the anterior and posterior lobes. Physiologically the anterior and posterior lobes, up to a certain point, seem to have separate functions. The anterior lobe is the more vitally important. Its removal results in death within a few days. The function of the posterior lobe is somewhat better understood, for the reason that it is possible to remove it and the animal will live. Inasmuch as the functions of both lobes overlap more or less, it is not necessary here to draw a close and fine distinction. What facts we possess concerning its physiology have been obtained through animal experimentation and clinical study of its pathology. There are a few effects of normal pituitary secretion that must be taken into account in any clinical consideration. The most impressive effect is its influence upon metabolism in maintaining and promoting normal growth. A hypersecretion will stimulate growth both in the thickness and length of the long bones, while a hyposecretion retards bone growth. Equally well marked is its influence upon carbohydrate metabolism. If hypersecretion be maintained in healthy animals by the injection of large amounts of posterior lobe extract over an extended period of time, there will be a rapid destruction of body glycogens with ensuing emaciation. On the other hand, a hyposecretion will retard the oxidation of glycogens and a deposit of fat will result. In connection with this fact it has been found that in animals or man where such hyposecretion exists, large quantities of sugar can be ingested without its appearing in the urine. This is termed sugar tolerance and its application clinically offers a simple and reliable test for hyposecretion. By what means the pituitary controls or is a factor in the disposal of the carbohydrates, is not known. It may be through its influence upon other glands of internal secretion, perhaps the pancreas.

The gland apparently exercises an influence also upon mental characteristics. In the early stages of certain cases of acromegaly

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there is a hypersecretion. During this period the individual's mental activity is increased and his ability for brain work is much enhanced. Later as the hyper- gives way to hyposecretion, these same individuals become dull and stupid. In the clinical types of hyposecretion this is true and the facial expression of such patients plainly bespeaks their impaired mentality. Experimentation confirms clinical observations on this point, for animals from which the posterior lobe has been removed are not as bright and active as the controls.

Experimentation and clinical observation give abundant proof that the influence of the pituitary is essential to the normal development of the sexual organs and secondary sex characteristics. In the interrelationship between the pituitary and the male and female sex glands, we find most interesting, well-established facts for our consideration, and a wide and fertile field for theory and speculation. If the pituitary be removed from a young animal of either sex, before the secondary sex characteristics have appeared, the sexual organs will not develop to the adult state, but will retain their infantile type. On the other hand, should the gland be removed from an adult animal, retrograde changes take place, the genitals reverting to their infantile type. In diseased conditions of the gland causing a hyposecretion there will result either failure of the sex changes to take place or reversion to the infantile type, depending upon the age of the patient.

That the normal phenomena of puberty depends upon a proper interaction of the pituitary and sex glands is quite evident. At puberty rapid and striking changes are seen in both sexes. In the female menstruation and ovulation are established. The mammary glands are developed and there occurs the characteristic growth of hair. The girl grows rapidly and suddenly acquires the mental attributes of the woman. In the boy is seen rapid growth, disproportionate in the hands and feet. There is the characteristic lozenge-shaped growth of pubic hair. Spermatozoa develop in the testicles and the accessory sex glands become active. Mentally, he changes too, losing many of his boyish notions and acquiring view-points that are more mature. It is not difficult to recognize the pituitary here as the activating agent. The phenomena of puberty, however, cannot, of course, be entirely attributed to the pituitary, for we find that such changes are due to its interrelation with the sex glands. There is abundant proof of this in the results obtained by the removal of the testicles or ovaries.

While the foregoing concerning puberty are demonstrable facts,

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if we should seek to inquire why at the age of fourteen so important a relationship is established between the sex glands and the pituitary, we must take refuge in theory. That the sex life of the woman is further influenced by the pituitary is clearly evident. It is definitely known that the pituitary enlarges during pregnancy. A number of investigators agree that this hypertrophy is the result of an enormous increase in what have been termed "pregnancy cells." So great at times is the enlargement that pressure of the gland upon the optic nerves has caused temporary blindness. What effect this hypertrophy has upon its secretion is not clear. Whether there is an increase, a decrease, or only a change in the character of the secretion, has not been determined. It is a very common observation that women frequently put on weight during and following gestation. Glycosuria is also commonly seen during pregnancy. One occasionally even sees the facial changes—the thick lips, the coarse features, and the jaw enlargement that would hint of a mild acromegaly. The remarkable effect of injection of pituitary extract in producing strong uterine contractions suggests several plausible theories by which the occurrence of labor has been explained. Recently the pituitary has been regarded as an important factor in lactation, while indirectly, it may be, animal experimentation thus far has failed to demonstrate a specific action. It is true that immediately following injection of posterior extract in lactating animals there is an increased flow of milk, but it is probable that this is an apparent increase only due to the muscular contractions produced in the mammary gland.

The foregoing effects of pituitary secretion as influencing puberty and pregnancy are to be regarded as normal manifestations. Apparently, however, there is a rather delicate secretory balance and clinically it is possible to distinguish certain types in which the normal relationship is disturbed. It is impossible, however, from our present knowledge to place in clear-cut groups the less obvious evidences of pituitary perversion. It is not hard to understand why this is so. Our knowledge of the physiology of the gland is imperfect and, furthermore, the clinical picture is often that of a polyglandular disturbance. The border-line cases will also present an incomplete syndrome. The time of life, too, that the perverted pituitary first exerts its influence will be a factor in determining the clinical manifestations.

In the child-bearing life of the woman the evidences of pituitary disturbance will result almost uniformly in menstrual disturbance. Decreased menstrual periods, or even amenorrhea, are often the

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first symptoms which give the patient concern. It is usually because of this that she presents herself to her physician, and any other symptoms of which she may complain are attributed by her, and too often by the physician, to the menstrual disturbance. The careless observer may not recognize the other evidences of disordered glandular function. It is not our purpose here to discuss the well-defined types of pituitary perversion, such as Fröhlich's syndrome, gigantism, and acromegaly, but it is the less obvious examples of pituitary disturbance that may commonly be seen, but rarely diagnosed as such, to which your attention is asked. For one who keeps clearly in mind what is known of the physiology of the pituitary, the recognition of the abnormalities of secretion is not so difficult. Upon the presence or absence of the normal physiological effects must, of course, be based our facts for diagnosis. In the analysis of any suspicious case, we must not focus too closely upon any one gland, and that ever close interrelationship of all the ductless glands must be kept in the foreground.

In the clinical types presented we must acknowledge that our studies are far from complete, and it is only by the accumulated evidence of many observers that we shall finally reach some practical classification of these patients.

The first type is that of young women from sixteen to twenty years of age. The physician is consulted because menstruation, which began late, stopped completely after a few irregular, painful, and scanty periods. These young women appear to be in good health. There is a tendency to obesity. They may seem fairly bright, but upon careful inquiry it is often learned that they are inclined to be indolent and take but little interest in school. Except that there is a somewhat sparse growth of pubic hair, the external genitals are normal. The uterus is found to be small. A diagnosis of infantile uterus is made and the amenorrhea and the general condition are explained upon this basis. Clinical study of such patients would reveal an increased "sugar tolerance." Such are undoubted instances of mild hypopituitarism in childhood which results in the deficient development of the sexual organs, and which becomes apparent only at and following puberty.

A similar type of hypopituitarism presents a somewhat different picture. These patients have a fairly normal menstrual life before their marriage, excepting perhaps, that the periods are scanty. Within a short time after marriage they gradually and steadily increase in weight, and at the end of a few years the increase is pronounced. During this period the menstruation has been less frequent and more

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scanty, until there may be amenorrhea. Sexually, they are usually indifferent. Their expression is listless and the better defined cases may complain of drowsiness. The hands may suggest by their comparatively small size and gracefully tapering fingers the perverted pituitary. Here, too, the physician, finding a small uterus is satisfied to explain the entire syndrome as one due to infantile uterus. In these patients the pituitary disturbance occurred after puberty and, therefore, did not influence the phenomena of puberty, but found expression later in the amenorrhea and increase in weight.

The next type of hypopituitarism presents such clear-cut and characteristic features that it is even now entitled to a place as a clinical entity among the pituitary dystrophies. Our patient is a married woman, and makes her first visit to her physician because she believes herself pregnant. She may or may not have been previously pregnant. She recites in detail the various symptoms upon which she bases belief in her pregnancy. The periods have either ceased entirely or there has been but a trifling indication of them at long intervals. The abdomen has shown a progressive enlargement and there has been a rapid and decided increase in general weight. She insists that she has felt life. The physician may accept her evidence as conclusive, computes the date of labor and sends her home. Or perhaps he examines her. He finds a very fat abdomen and the examination is not satisfactory. Influenced by her statements, he may either agree with her diagnosis, or express uncertainty. Our patient, however, shares none of his doubts. She returns home and continues to make to the minutest detail her preparations for her confinement. On the date of the expected labor the patient has pains and the nurse is summoned. The physician arrives and finds all in readiness, and the family in a state of eager expectancy. He examines his patient to learn the progress of labor, and discovers that she is not pregnant! Upon his announcing this, the patient becomes indignant, calls him a fool, and may dismiss him on the spot. As far as he is concerned, with his pride a trifle ruffled, he regards it as a case of mistaken diagnosis and the incident as closed.

Upon a more careful scrutiny of such cases, they will be found to possess a characteristic syndrome. There is always a history of menstrual disorders, varying from skipped and scanty periods, to amenorrhea. The women put on weight very rapidly—50 to 60 pounds within a few months is not uncommon. Stomach symptoms are often present, even with vomiting. There is an

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intense longing for children and, when the menses cease they are convinced of their pregnancy, and are happy. As their condition progresses this belief becomes a certainty. They are completely dominated by this idea and they interpret all of their symptoms as due to pregnancy. In the face of expert opinion and strong evidence against pregnancy, their belief remains unshaken. It is a mental state, an obsession, an unreasoning conviction, that nothing can dispel except the failure of labor itself to take place. These women will be found to have a high sugar tolerance, which, together with amenorrhea and very rapid increase in fat, justifies classifying their condition as being the result of pituitary disorder. The predominating obsession of pregnancy makes it possible to place them in a distinct group, and in order to indicate the origin of their disorder, and, at the same time, to express the dominating feature, I would suggest the term "Pseudocyesis of Hypophysial Dystrophy."

These unfortunate women have afforded amusement and often embarrassment to the members of the medical profession. Most general practitioners have played a part in such cases, and every gynecologist has had the opportunity of acting on the question of pregnancy, as a court of last resort. Whether or not an internal secretion could or does influence so vital a process as reproduction, by instilling a love of offspring, is a question, of course, open to wide discussion. That mental processes are influenced by toxines and drugs is evident in the melancholias and psychoses of toxemia and the mental states produced by cocaine and opium. In the lower animals we see curious and interesting phases of maternal love. In animals in which we cannot expect to find a mother love as a result of mental reasoning, it is nevertheless present to a marked degree. In these same animals, after a period of time has elapsed, we see a complete revulsion of feeling, which would indicate clearly the loss of some powerful influence previously existent. There is no better example of strong desire for offspring, and tenacity of purpose in attaining the fulfillment of that desire, than the setting hen. She usually meets with decided discouragement, but, in spite of ill treatment and rough usage, she persists in her unreasoning conviction that she can hatch a chick from the door-knob upon which she so patiently and hopefully sits. Neither is there any better example of mother love than this same hen with her brood of little chicks. It is clear that the hen is impelled by some agency other than a mental process, which influences her to devote her entire energies to the consummation of her desires. Investigation has shown that the hypophysis of the setting hen hypertrophies,

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but it is not known what influence this hypertrophy has upon the amount and nature of its secretion. It is not unreasonable to attribute this vital process to the pituitary when we realize that it is responsible for such a remarkable phenomenon as hibernation. It is not difficult to find an analogy between the setting hen and the syndrome described as pseudocyesis of hypophysial dystrophy. There are wide chasms still to be bridged in this subject. To the student, it affords a most fascinating field for clinical research and study, and its promise for the future is rich in possibilities.

While clinically the subject of pituitary dystrophy is still in chaos, the therapeutics is even more discouraging. Manufacturers very generously placed at my disposal various pituitary preparations which were tried in a number of cases of pituitary dystrophy. The results were disappointing but not discouraging. They indicated that it is probable that treatment of these patients is a complex problem, and my experience convinces me that the solution of the question will come only after we have learned more of the balanced relationship of the endocrine system.

DISCUSSION ON THE PAPERS OF DRS. BANDLER, HAYD AND KING.

Dr. G. Van Amber Brown, Detroit.—What I want to speak of comes within the scope, more particularly, of Dr. Bandler's paper, the bleeding from the uterus in young women. Correction of this hemorrhage is frequently sought by the use of the curette. With the employment of this instrument we get symptomatic improvement, only to have the bleeding recur in a short time, the origin of the disease is not in the uterus but in the adnexa.

We have, physiologically, an infantile ovary and as a result we have bleeding. The condition is spoken of as glandular endometritis, but more properly as metropathia hemorrhagica. These cases can be cured by the use of ovarian extracts or corpus luteum.

Dr. J. Henry Carstens, Detroit.—I think there is no doubt that there are cases of hemorrhage from the uterus that can be cured absolutely and perfectly by curettement, and there are other hemorrhages that are due to pelvic disease. It is simply a question of diagnosis. In the future, as we come to understand more clearly the moot questions in reference to the ductless glands, we are going to get marvelous results by treatment with the use of the various extracts and active principles of the ductless glands, and it is up to us right now to clear up all these moot questions so far as possible.

Dr. James F. Percy, Galesburg, Illinois.—It is to be regretted that it is necessary to use glandular extracts purely from the empirical side, as was pointed out in the papers which we have heard this morning.

In 1912, I took up the matter of the influence upon the new-born child of the different glands belonging to the chromophin system

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with two of the best-known physiologists and embryologists in this country. They told me that there had been no work of this kind done, and there was not any literature to be found anywhere that would help me except isolated papers. One of the things that I regret is that in these papers that have stimulated us so thoroughly, there has been absolutely nothing said about my work in the use of the thyroid gland in nephritis, which I think is the most important phase of the use of thyroid extract that has been given to the profession, because you can take a woman who is a nephritic and feed her thyroid gland and she will go through with her pregnancy safely and apparently without danger. This is a broad statement to make and will probably need revision as greater experience comes, but that is my experience so far.

Recently I had, as a patient, a woman who was a pronounced nephritic. She was the mother of only one child and had this nephritis with the first child. Her urine was loaded with albumin and casts; she presented herself two months' pregnant, and I knew of her nephritic condition and advised that she miscarry and she absolutely refused. She said she would rather die than lose the child. I kept her on the thyroid extract up to the point of its physiological action and the most useful symptom to me is to find a tremor with the extended arm and hand and the fingers separated. As was said by the essayists, some of these cases will not tolerate the thyroid extract, but I have found very few of that kind. They sometimes become depressed and suffer from dyspnea, but if you cut down the dose you can get along with them. What I have said holds true in the nephritics not only in pregnancy, but in the average case that you see. This, of course, is a pronounced case, but I have a lot of patients who apparently are absolutely well, who have gotten rid of casts and albumin in the urine, who have gotten rid of all the symptoms of nephritis after a course of the thyroid extract. I am speaking now of advanced cases. I recall one man who was waterlogged, he had enormous legs and thighs, edema of the face and hands, and could not lie down. His neighbors stood by him during the night while he slept with his hands over a high-top desk. When they thought he was going to fall they would wake him up. That man in ten days was lying down and slept like a baby following the use of thyroid extract.

In my first paper, in 1912, I reported having treated thirty-five cases. I was in the same position as Dr. Ferguson, of Chicago. I heard Dr. Ferguson say that he had had thirty-five cases of hypertrophy of the prostate, and in every one the patients had gotten along well, with no annoyance or trouble after the operation. He went around with his chest inflated and intimated that the other fellow should have the same results. Then, he said, the next four cases he had all went wrong. Every one of them leaked and had no control over the bladder. That is true of my thyroid experience. I give the thyroid extract up to the point of physiological tolerance; as much as 50 grains of the dried gland in a day. I usually use a dose of 2 grains which represent 10 grains of the fresh gland. It

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is marvelous how some of them will tolerate this drug. It may be, as suggested here that some of this thyroid is not active, but that there are other substances in it. Usually the cases clear up in six weeks, if they do so at all. They should be put to bed rather than allowed to be up and around.

In reference to the simple pituitary cases, they are exceedingly common and are frequently overlooked. Last year I reported to the Illinois State Medical Society eight cases of hypopituitarism in young girls and strangely enough four of them were the daughters of physicians. The physical characteristics of these patients were not pointed out by the essayists, if I understood them correctly. These patients are usually fat girls, and you cannot get them thin by dieting as a rule. One of the supreme characteristics of these cases is that the fat is hard; they all have beautiful hands, with tapering fingers, and as pointed out by one of the essayists, they have a sugar tolerance that is quite characteristic. These patients do remarkably well on thyroid and present one of the chief indications for its use.

We can talk about the thyroid in an empirical way at great length, but as to patients with these two conditions I have mentioned, nephritis and hypopituitarism, I have done various things for them without any results, and they have been greatly benefited by the thyroid extract. I believe this marvelous drug, when we learn its full indications, will be one of the most potent and useful remedies in our armamentarium.

Dr. James E. Davis, Detroit.—There is a close correspondence between the present state of our knowledge on metabolism and the pharmacology of these extracts of the internal glands. I do not know of any field that offers more for the patient worker than that of either metabolism or the pharmacology of the glands of internal secretion. The applications that have been made here to-day are indeed suggestive and stimulating. When we think of the metabolism of the critical physiological periods of life, we can easily recall many of our clinical problems.

The period of puberty has been referred to and I think all of us have been guilty at times of endeavoring to correct some error in the metabolism occurring at this time by surgical means when we should have resorted to some of the means suggested in the papers. The same is true of the period of pregnancy and the period of the menopause. Considerable work has been done upon the metabolism of early pregnancy. During the first three or four months there is a negative nitrogen balance; the pregnant woman later on comes to have a positive nitrogen balance. During the first four months we have the clinical evidences of a negative nitrogen balance as shown by many well-known symptoms, such as hyperemesis gravidarum, or others associated with this period, when there is a close contact between the embryo and the maternal organism. It seems during the period of placentation the mother is striving to contend with an invader or an enemy and some mothers are not able to contend successfully with this attack. The best

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explanation perhaps for this condition is, that in the chorion there is secreted a substance which causes a solution of the mucous membrane of the maternal organism and threatens to destroy a part of the same. Evidence of this is the marked edema and the other conditions that are so well known during this period. The oft repeated bit of history we all have obtained is, that after a woman has borne a child she has not been well since the birth of this child and we endeavor to reckon with that condition by our surgical measures. I believe that very frequently we have to deal with a problem in metabolism. The same is true in oft repeated abortions. Here investigation is needed in the problems of metabolism or the interaction of the secretions of the internal glands. I want to suggest that much useful information can often be obtained in these cases by having an *x*-ray made of the sella tursica. A number of Röntgenologists have shown deviations in the anatomical form of this structure and with the other information we may gain by close study of these cases, we can hereby advance our knowledge and improve our armamentarium.

Dr. Hugo O. Pantzer, Indianapolis.—For the last two years I have resorted to organotherapy in but very few instances. This is because I felt I had not the specific information to guide me in the selection of the special extract to be used in the individual case. This morning I have been guided in a way that will be helpful to me. In the meantime, during these two years, I have sought to define another etiological factor which is active in these cases. I have reference to a toxemia that comes not *per se* from hypo- or hyperactivity of these glands, but from extraneous sources.

The disturbances of function in all glandular structures incident infections of the mouth and throat are noteworthy. The ovarian, to uterine, mammary glands, and the other organs of internal secretion, are all influenced in their function by these infections. In many instances active eliminating measures in these cases have alone sufficed, without resort to organotherapy to correct the disturbances of function of such organs as here have been mentioned. I wish to emphasize this point.

Dr. E. Gustav Zinke, Cincinnati.—When I studied embryology, from books alone and without the aid of a teacher, I often wondered how the authors knew that what they said was true. In order to grasp the subject at all, I was obliged to commit what I had read to memory and then, parrot-like, repeat it to my class. By and by, however, came the realization that the men who wrote the books had told the truth, and that the development and growth of the body could not take place in any way other than that described. So it has slowly dawned upon eyeryone, who has earnestly studied the subject of internal secretions, that the papers presented this morning were only unraveling and making plainer the facts revealed by the careful and painstaking studies of the endocrines.

We had a striking illustration of a case of pseudopregnancy in Cincinnati, which occurred about forty years ago. A well-trained practitioner, who enjoyed a large obstetric practice, was

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consulted by a woman who had never been pregnant, though married eighteen years. She had always been eager to have children, and felt correspondingly depressed because of her inability to become pregnant. Quite unexpectedly she visited her friends and confidentially informed them that, at last, she was to become a mother. She went to the doctor and engaged his services for the anticipated confinement. Without an examination the usual advice was given and all the arrangements for the approaching event were made. When the time came, she began to have pains, the doctor was sent for, remained all night, most of the next day, and again the following night. Still, no child was born. Toward the morning of the second day, Professor William H. Taylor, the first president of this Association, was called to see the case in consultation. He found the patient sleeping soundly. After she awakened he was ushered into the room, made an examination, and to his astonishment found her abdomen flat as a pancake, and discovered that no child had been born.

DR. BANDLER (closing the discussion on his part).—I want to spend two or three minutes in discussing the papers of Drs. Hayd and King, which were extremely interesting to me. For many years all of us have known, even the tyro in medicine, that the ovaries are concerned with menstruation and the ovaries are female glands, but it took many years before our specialists realized that the thyroid was a female gland, as you have seen from the paper which was read by Dr. Hayd.

In the last three or four years we found that the pituitary gland, especially the posterior lobe, is a female gland, as Dr. King has shown in his résumé of the physiology, so that we as gynecologists, with all the disturbances of menstruation to contend with, must think in every case of the ovary, the thyroid, and the pituitary gland, all three being involved practically in all these cases.

Dr. Hayd's case of Raynaud's disease is interesting. I have had a number of what may be called "baby cases." Hyperthyroidism is a ' baby type" of exophthalmic goiter. We see girls who have a poor circulation, blue hands, and cold feet. They do not stand the winter well; they get along better in summer. We can improve them tremendously by the use of the thyroid extract. They suggest minor types of Dr. Hayd's case.

Dr. King showed three types, from the "baby form" to hypopituitarism, and then the extreme types of dystrophia adiposis genitalis. There is not one of you who has not seen various gradations of pituitary upset. Anyone can recognize the extreme type, but what we want is to fix our attention on the signs by which we may be able to recognize the minor types.

Physically we can recognize these types. I have made many diagnoses of submerged exophthalmic goiter by a slight prominence of the eyes. I make it a point to look carefully at every patient who comes into my office and by so doing I am able to diagnose many cases of hypopituitarism or pituitary anomaly by the little graceful hands. Take the fat woman in a circus with fat arms and fat legs,

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and when you shake hands, you realize she has a pituitary anomaly. When a man is thick and broad-chested and is as powerful as an ox he has an anterior lobe that has done good work for him.

I wish to call attention now to the nerve element, because every one of these glands not only controls physically the growth of the individual and of the physique, but the nerve element. We know that the nervousness of the hyperthyroid case does not have to be an exophthalmic goiter case. We know the depression of hypothyroidism, which almost amounts to melancholia at the menopause and at other periods. We know the exaltation of hyperthyroidism. We know the exaltation of pituitary anomaly; we know the depression of the posterior lobe anomaly.

I am very proud of our specialty of obstetrics and gynecology, and I do not subscribe to the ideas of any man who says that the day of gynecology has passed because the gynecologist does general surgery, or the general surgeon does gynecology. In every community a man must be a gynecologist and an obstetrician to be a real, thorough specialist. That is the dignity of this specialty; but in addition to that, every good specialist must be a good neurologist, and the discredit, that is cast upon gynecologists by the neurologists on the one hand, and the internists on the other, is due largely to the fact that we have not in the past given as much attention to the neurological aspects of our cases as we should have done, but we are doing it now. We are meeting our problems now with brains. It is just as essential to know when to operate as to know when not to operate.

When a woman has had one or two children and is nervous, depressed, and suffering from one symptom or another, and has trouble with her husband or her mother-in-law, you can see that woman is not well. But the chances are she has been to her physician or a specialist and he has found nothing wrong. Her ovaries are normal; the uterus is in good position and everything else is right. He hesitates to do anything for her. But when that woman says, "I am tired and nervous; I am sleepless," he begins to think she is one of those women who have no backbone and pretty soon she begins to think she has no stamina. These women may have hyperthyroidism and hypothyroidism; they may have pituitary anomalies. Why operate for retroversion or retroflexion of the uterus when that has nothing to do with the individual's condition? If the ovarian secretion is not doing its work, reacting on the thyroid; if the thyroid is not doing its work; then our specialty should rise to the dignity of a science and decipher these abnormalities. That is why papers like those Dr. Hayd and Dr. King have read fix our attention on the nervous side of gynecology, teaching us things which lead to other paths and reflexes, which is one of the most important problems to deal with.

Dr. King (closing the discussion).—If there is any one thing that indicates the confusion regarding many of the clinical conditions that result from perversion of the glands of internal secretion, it is the discussion which these papers have brought forth. In my own

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contribution I hoped to call attention to certain clinical types of pituitary perversion, which with our better understanding in the future, we may be able to classify more satisfactorily.

As to the pseudocyesis of hypophyseal dystrophy, I do not wish to be understood that I consider all women who rapidly put on weight as being sufferers from pituitary perversion, nor is every woman who thinks herself pregnant a victim of pituitary disease. I do bespeak the interest of the profession, however, in those cases which are unquestionable to be attributed to disturbance of the hypophysis and which present a definite constant syndrome. In this connection there is possibly a historical character that may have been a victim of pseudocyesis of hypophyseal dystrophy. You will recall that during the reign of Mary Tudor, her realm on several occasions was excited by the news that she was to have an heir and she made elaborate and detailed preparations, but each time when the event should have taken place nothing further happened.

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URETEROVESICAL ANASTOMOSIS.

BY

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As intimated by the title of this paper, the subject of ureteral anastomosis can be considered only when the junction of the ureter is to be made to the bladder. As the time given me for the presentation of my subject is limited, no attempt will be made to take up even that in exhaustive detail.

This operation is called for by ureteral obstructions and strictures, injuries of the ureter, sometimes during labor, but more often as a result of operation, and where a deliberate resection of the ureter is planned in the removal of a bladder growth or where the extension of a growth from another organ makes it wise to remove a portion of the ureter.

In the female, strictures of the ureter are rather common, Hunner having reported fifty. Most of his cases had the obstruction in the upper end of the ureter; in my experience, the proportion of upper to lower strictures has been about three to two. Without going into the etiology or the methods of diagnosis of such strictures, I would suggest that the following type of case is suitable for this operation.

Tuberculosis is a cause of ureteral obstruction and it is essential that this be ruled out as it contraindicates this operation. There are many ureteral strictures that can be dilated, but in which the stricture reforms in a very short time. These, in the absence of contraindications, soon to be considered, are I believe, suitable cases for operation. The same applies to strictures that cannot be dilated. A moderate degree of infection and kidney insufficiency is not a contraindication, but an indication for operation. However, should the infection be severe and the kidney function markedly damaged, nephrectomy is preferable in the presence of a good kidney on the other side; for in such a case as this, it is worse than useless to drain so badly damaged a kidney, as the continued discharge of pus will prolong the already existing bladder infection, to say nothing of the increased operative risk.

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Bilateral obstruction is an indication rather than a contraindication for operation, for with obstruction of both ureters it is only a matter of time before they are irretrievably destroyed. In fact I believe that the bilateral condition is a wider indication for this operation than where the trouble exists on only one side.

In doing this operation for stricture, one must consider that the same cause may eventually affect the other ureter. I have had such an experience.

I believe that in the future many more of these cases will be operated upon. If these strictures cannot be kept dilated and are not operated upon, the back pressure will cause pressure atrophy, and the poor drainage will favor infection, with the eventual destruction of the kidney. I have been criticised for such radical views, but the critics have not come forward with any helpful suggestions. They claim that after such an operation, contracture of the newly formed ureteral meatus, occurs, with back pressure, dilatation of the ureter and the renal pelvis, and infection of the kidney. These claims are directly contrary to the experience of the Mayo Clinic, from which Judd has reported cases, in which all the evidence points to the fact that after such an operation a kidney can and does perform its function normally for an indefinite time. Later I hope to report in detail my own experience. One case that I did three years ago, now has less ureteral and pelvic dilatation than at the time of operation, the urine is free of infection and the function of this side equals that of the other as proved by the indigocarmine elimination. A patient operated upon in March of this year shows a diminution of pelvic dilatation from 10 c.c. to 30 c.c., with less pus than at the time of operation; she is relieved from the attacks of renal colic from which she suffered.

The greatest scope for this operation is in ureters injured during operation, where a portion of the ureter has to be resected in the course of another operation, and for the injuries of childbirth. The injury to the ureter during operation may be recognized at the time, a few days after operation, or not until many days, usually from seven to twenty, have elapsed, and a fistula, either ureterovaginal or ureteroabdominal, has developed. Usually the tying of one ureter during operation is not recognized early, the tying of both is suspected if after a complicated operation there is no excretion of urine.

If the injury is detected at the time it is inflicted, the anastomosis should be made immediately if conditions permit. If it is detected shortly after operation and is on only one side, a consideration of the patient's general condition will have to be taken into account

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before subjecting the woman to another operation. If the injury is to both ureters, and this injury is a ligation, then the patient must be operated upon, if catheters cannot be passed. This operation may be done simply to release the ligatures, or if there is evidence that the vitality of the ureter has been so injured that a fistula is likely to develop, it may be advisable to go ahead with the anastomosis at once. On two occasions I have accidentally clamped the ureter, and in each case the clamps remained on about seven or eight minutes before this was detected. Both of these cases were women in whom I was doing a hysterectomy and in each the ureter was dissected free of its attachments for about 3 cm. In one a ureterovaginal fistula developed on the eighth day and in the other on the twentieth day. Such an experience leads me to think that in the cases where the ureter has been dissected free and then clamped, that it is better to immediately anastomose the ureter into the bladder.

With our increasing experience and more radical operative measures we are encountering more and more ureteral injuries, with consequent fistulæ. The former frequent cause of this condition, labor, is now seldom a factor, and it is very unusual to see a fistula from such a cause.

Whether or not a ureteral fistula, of either the abdominal or vaginal type should be repaired depends upon a number of factors:

a. Location of the fistula.

b. The presence or absence of infection.

c. The function of the kidney on the involved side, as well as the combined function of the two kidneys.

d. The general condition of the patient and the extent of trouble in the pelvis.

a. Location of the Fistula.—A mental review of the operation, if done by oneself, will often give an idea of the probable manner in which the ureter was injured and the location of the injury. The best information is however, to be obtained by a combination of vaginal, cystoscopic and ureteral examinations, at the same time using indigo-carmine or phenolsulphonephthalein to test the function of the kidney. Before attempting an operation, the location of the injury, the presence or absence of infection, and the function of the kidney must be known. It must however, be remembered, that the point at which a ureteral catheter becomes obstructed, does not represent the end of the kidney portion of the divided ureter. It may be quite a distance further up. I saw one patient in whom there was not the slightest resistance to the passage of the catheter,

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this being due to the fact that the catheters on both sides passed directly into the vagina. In estimating whether or not an anastomosis can be done, the extent to which the bladder can be elevated after loosening some of its attachments, and the degree to which the kidney can be lowered, by a similar procedure must be considered, for the distance thus gained often makes practical an otherwise impossible anastomosis.

b. Presence or Absence of Infection.—A moderate degree of infection is not of itself a contraindication but is often one of the indications for operation, as such slight infections usually clear up after the formation of a proper anastomosis. In all these fistula cases there is more or less contraction of the tract and such contraction causes back pressure, dilatation and infection, which are relieved by the operation.

c. Function of the Kidney on the Involved Side.—The function of the kidney on the involved side must be determined to learn whether or not it is worth while to save such a kidney, and the combined function to determine the patient's ability to undergo an operation of this magnitude, and to live for a satisfactory period should the operation be successful. It is worse than useless to anastomose the ureter of a kidney badly infected and functionally incapacitated.

d. General Condition of the Patient and the Extent of the Trouble in the Pelvis.—Both the local and general condition of the patient is to be considered, for an operation should not be attempted unless the patient is in at least fair general health or, in whom the condition, *i.e.*, recurrence of carcinoma in the pelvis, contraindicates operation.

Suitable cases are those where the fistula is so situated that an easy approximation of the ureter and the bladder can be made, where the infection is only slight or moderate and where the function of the kidney is good or only slightly impaired, with the patient in good general condition, and no pelvic condition that will make the operation technically impossible.

In regard to the time after the primary operation, the most opportune is that when most of the exudate that always forms around such a fistulous tract has disappeared and before the function of the kidney has become damaged from contraction of the fistulous tract.

In the operation of anastomosing the ureter to the bladder the utmost pains should be taken, for success depends upon one throw of the dice. Should the operation fail and should the patient not die, we will have a ureteroabdominal fistula (rarely a uretero-

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vaginal fistula) as the result, and this with the upper end of the ureter so shortened that it is not likely that a subsequent similar operation can be done with success.

Choice of Method of Operation.—In the abdominal fistulæ the abdominal route is the only one that can be undertaken, while in the vaginal cases, the operation can be done by the vagina or through the abdomen. In only exceptional cases do I think the vaginal method indicated. There are rare cases where the lower end of the ureter itself can be dissected out and turned into the bladder, and for such the vaginal route is the one of choice. It is technically possible in a large number of cases of ureterovaginal fistulæ to turn the end of the fistulous tract into the bladder and relieve the patient of the leakage, but it must be remembered that the operation is one of fistulo-vesical anastomosis and that the fistulous tract will continue to contract and that the kidney will eventually be destroyed as a result of pressure atrophy and infection. I did such an operation that was successful in so far as it relieved the patient of her leakage, but two years later I had to remove a kidney that was causing a persistent cystitis, and which was devoid of function.

Technic of Abdominal Ureterovesical Anastomosis.—Should the anastomosis be made at the time of injury, or after the necessary resection of the ureter in the removal of pelvic organs or a partial ablation of the bladder, the technic of the actual joining of the bladder and ureter is very much the same as that to be described. Where the operation is done for fistula or stricture, I think a one-sided modified Pfannenstiel incision gives the best exposure. This starts at the level of the anterior-superior spine of the ilium and 1 inch to its inner side and passes downward in a curved direction to the midline, or just beyond, 1½ inches above the symphysis. The fibers of the external oblique are divided in the same direction, as are also those of the internal oblique; these latter are necessarily cut somewhat obliquely. The transversalis fascia has to be divided with a sharp knife and with extreme care, or the peritoneum will be opened. Should it be opened, it makes the operation technically easier to separate it from the transversalis fascia before closing the opening. After the line of separation of the transversalis and the peritoneum has been struck, the peritoneum is peeled by blunt gauze dissection from the lateral and then the posterior pelvic wall, the iliac vessels being nicely shown. After these come into view a search is made for the ureter on the peritoneal reflexion (and not on the posterior pelvic wall). In these cases it is usually easily found, because of the almost constant thickening and dilatation;

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often this is so great as to mislead one. I know of a surgeon who looked for two hours for ureters that were directly in sight because he failed to identify the greatly thickened structures as ureters. Should doubt exist, it can often be expelled by so irritating the ureter that it will call forth its characteristic vermicular action. Should the fistula follow a hysterectomy the exposure is simplified because of the obliteration of many of the pelvic vessels, though usually these are not troublesome, the operation being sometimes done without the ligation of a single vessel. After locating the ureter, usually near the pelvic brim, it is best to grasp it with a pair of Allis clamps, in such a way that the teeth come together beyond the ureter and so do not injure it. By applying these clamps successively lower and lower, and using blunt gauze dissection the lower end of the ureter is easily reached, or the point where the divided ureter enters the scar tissue that is always around the fistula. Occasionally it is necessary to double ligate and divide the uterine artery, to gain better access to the lower end of the ureter, but this can as a rule be done without trouble. All small bleeding vessels should be controlled with ligatures, for the best work can be done only in a field free from blood. The ribbon form of retractor aids materially in exposing the operative area.

The ureter should not be freed from its sheath or the peritoneal reflexion except for the inch that it is to pass into the bladder, for such separation from its attachments imperils the blood supply and the nutrition of the ureter. When a suitable point for division of the ureter is determined and attained, it is here double clamped and cut. The lower end is ligated, not so much to prevent the leakage of urine from the bladder, as to control a small vessel that is usually found in the sheath just under the ureter. The upper portion of the ureter is then dissected free of all attachments for one inch or an inch and one-quarter—this limited dissection I believe to be of great importance in conserving the nutrition of the ureter.

Should there be difficulty in bringing the ureter and bladder together, the bladder may be mobilized by freeing the attachments on that side, and the kidney similarly treated as first advocated by Bovèe and practised in the human being by Payne.

There are numerous methods of making the union between the bladder and the ureter, but the following is the one that I have found most satisfactory. The nearest portion of the bladder is located in the lower angle of the wound, deep bites about 1 inch apart taken with weak Allis clamps. By making traction on the clamps a double layer of the bladder is brought up in the lower

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portion of the wound. A sharp pair of artery forceps is then pushed through both these walls, entering anteriorly and emerging posteriorly; the forceps is thus made to enter and pass out of the bladder. The bite of the ureter held in the forceps is then transferred to the forceps that has passed through the bladder, when by traction on this forceps the ureter is drawn into, and again out of the bladder. While held in this position the ureter is stitched, where it passes through the posterior bladder wall, with four or five interrupted sutures of fine silk. Care is taken that one of these includes the sheath of the ureter where the free dissection ends. This prevents the pulling of the ureter out of the bladder. The forceps on the end of the ureter is then removed, as are also the two used to elevate the bladder. By then picking up the anterior wall of the bladder with another pair of forceps and drawing it forward, the free end of the ureter is made to slip into the bladder cavity. The opening in the anterior wall of the bladder is closed with a running stitch of fine chromicized catgut.

This method of making the opening in the bladder, I believe is preferable to the one in which forceps are passed through the urethra to accomplish the same purpose, as that necessitates another assistant and the disarrangement of the patient and the operative field without offering an advantage. The puncture method I believe better than making an incision into the bladder, which I have always found rather difficult. It is usually found after the opening is made that it is larger than anticipated or desired, and even though it can be sutured, I think the chances of good union are lessened.

If there appears to be any traction on the line of suture, it is well to attach the bladder near the point of anastomosis to the lateral pelvic fascia.

A rubber tissue drain is inserted into the wound beneath the transversalis fascia, but does not come in close apposition to the anastomosis. Even though the wound looks dry, there is much serosanguinous leakage for the first seventy-two hours, at the end of which time the drain is removed. The wound is closed in layers with fine chromic gut and Michel clamps on the skin.

A Pezzer retention catheter is placed in the bladder for seven to eight days. The patient is put on monobasic sodium phosphate 20 grains, three times daily before meals and urotropin, 15 grains three times daily after meals a few days before operation. This is resumed as soon after operation as the stomach will permit and continued well after the time the catheter is removed. The

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catheter should be removed daily for cleansing as a stoppage may wreck the operation, and the bladder should be irrigated with boracic acid solution twice a day.

The chances for union between the bladder and the ureter are claimed to be greater when the operation is done as an intraperitoneal procedure, but I believe the greater risks of an infection that will carry the patient off are more than counterbalanced by the safety as far as life is concerned of the extraperitoneal operation.

This paper was illustrated with the aid of a cinematograph demonstration.

DISCUSSION.

DR. HERMAN E. HAYD, Buffalo.—There are very few subjects that come before the Association of more importance than ureteral injuries. If we tie off the ureter in the course of an operation, no symptoms are evident after the operation. We do not know that the accident has taken place, unless we have tied off both ureters and then we get no urine. The important question to decide is, when shall we attempt an anastomosis or when shall we try to transplant, if possible, the ureteral end into the bladder? I had an unpleasant experience some years ago which I reported in the Transactions in a paper on "Ureteral Injuries." I was very much distressed, and in a rather serious position with the possibility of a lawsuit on my hands as a result of this accident. I had done a vaginal hysterectomy, the woman went through her convalescence and apparently was to enjoy perfect health. In fact, during the whole course of her illness she had had only one-eighth of a grain of morphine and I congratulated myself that the work was very satisfactory indeed. She left the hospital on the fourteenth day and between the third and fourth week she felt something suddenly give way and her underclothing was wet with urine. I immediately anticipated what had taken place, and the question came up what should we do. After a careful examination and the facts were established, I put myself in communication with Dr. William Mayo and explained the situation. He said that this accident had occurred more than once in his experience and that of others. The grave problem now was to decide whether a woman with one good kidney, which was sufficiently compensated and was doing the work of two kidneys, was not infinitely better off with that one kidney, than to try to transplant the ureter of the injured side, because after a period of five weeks, in his experience, at least, ureteral fistula in the kidney had taken on such atrophic changes that it did not matter, if the ureter was transplanted or not; that the kidney ceased to functionate. In my communication to him, I told him that inasmuch as I had never transplanted the ureter under such circumstances, I would send the patient to him. He replied that he would be delighted to do what he could for me under these circumstances, but

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he wished to be free to remove the kidney if he thought best. After receiving that advice from him and the frank way in which he presented it, I made up my mind to take the kidney out, which I did and the woman made a satisfactory recovery and is well to-day. As to transplantation of the ureter when injured during operation, it is a very much simpler situation than to deliberately cut down and expose the end of a ureter injured some weeks previously and try to transplant it into the bladder.

I think the doctor has shown us beautifully in the picture how satisfactory it is to go through the bladder, as he has done, with his forceps and then pull the ureteral end into the posterior opening, sew it there and then close up the anterior opening. That is not the method I employed in another case when I had to transplant the ureter. I simply made a hole in the bladder by passing an instrument up through the urethra, making the bladder taut at a point on this instrument which was cut down on, the ureter pulled through and sewed to the edges of the bladder wall.

But the way the doctor has shown us to-day in this paper, I am satisfied, is very much simpler and I am sure decidedly better. It is a big undertaking, however, and a man must have a lot of experience to do the late operation in any case, particularly if it is in a case where you are responsible for the original injury, as that creates a mental hazard.

DR. ALBERT GOLDSPOHN, Chicago.—In the days when vaginal hysterectomy was customary, some women died from an accidental and unknown ligation of the ureter and the cause of death was supposed to be due to something else.

Previous to twelve years ago I also made two implantations of the ureter into the bladder in cases of uretero-vaginal fistula following vaginal hysterectomy, one of the latter by myself and another performed by another surgeon. The incision was made practically as the essayist has demonstrated, the ureter was exposed extraperitoneally, and the approximation made by the method of loosening up the bladder and pouching it out in the desired direction. The doctor's technic of implanting the ureter I think is preferable to what I did at that time. I passed uterine dilating sounds into the bladder, pouched it out as desired, cut down on it and implanted the ureter, taking care to incise the ostium of the ureter, so that it might not contract but become everted within the bladder, and also taking care to construct something of an extravesical cuff around the ureter at the point of implantation. There was no particular difficulty in these cases and the patients made a good recovery. I am, however, more directly interested in what to do with those cases where we cut across the ureter so high up in the abdomen that implantation into the bladder is not possible. Shall we simply ligate the end of the ureter and drop it? When that is done, it is advisable to tie a knot in the ureter back of the ligature at the end. But how freely may we do this and how advisable are the attempts to transplant the injured ureter into the opposite ureter, or into the large bowel? These latter procedures have been done experi-

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mentally, but so far as I know, they have not been successful. It is not advisable and my feeling now is, if I were dealing with a patient where I had no doubt about the normal capacity of the opposite kidney and the patient had about enough operating for that time, as these patients frequently have, where this injury occurs, I would tie the ureter and drop it. These cases are usually desperate, because either some large tumor has to be dug out, or deforming adhesions or cicatricial formations have led to the accident. The opposite kidney will gradually acquire additional functional capacity to serve the patient's purpose. Some of these patients, whose cases have been related to me by colleagues, have passed through the experience without having had unusual pain and happily ignorant of the occurrence. Later on, if there is cause for a nephrectomy, it can be done quite safely in such cases when that additional function has been assumed by the other kidney. But I would like to know from the gentlemen who have had experience with the subject, what their judgment is about this matter, what to do with the cases, where the ureter cannot be implanted into the bladder.

DR. A. B. MILLER, Syracuse, N. Y.—The cases that have been presented have a special interest for me from the fact that I had in my early abdominal work an experience of this character. I think, as has been stated, ligation of the ureter accidentally is of much more frequent occurrence than we have heretofore expected or has been recognized by abdominal surgeons.

One instance which impressed me was a case of abdominal tumor in shape like an elongated watermelon which pressed upon the perineum and extended up to the diaphragm. On opening the abdomen it was found to be an elongated fibroid; the peritoneum was turned down from this immense growth as you would remove your overalls from your trousers. The technic was not difficult and I was congratulating myself that it was one of the easiest hysterectomies I had ever had. Upon returning to my home, as I operated in a neighboring city, I was phoned the next morning that the patient had failed to urinate. I felt there must be some shock and believing that the technic was good, that there was no fear of the ureter having been tied off. In the night of the second day I received another telephone message. I went to the city and found that my patient had not passed any urine. It was apparent we had tumefaction in the region of the kidney and what to do with it was difficult to determine. The patient, whose general condition was good, was turned over upon the abdomen, as we thought she was going to be worse unless something was done. Cocain was injected into the lumbar region and the kidney cut down upon, the ureter found, the knot separated with relief of the obstruction. The ureter was left to come out of the lumbar incision, and I went home rejoicing, thinking that my patient would at least have one kidney that might be restored subsequently if she failed to have two. Three days afterward I was again telephoned that my patient was doing well, but there was decided tumefaction on the opposite side. I returned to the

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city and opened up the lumbar region under cocain anesthesia, which was a simple matter. It is not a difficult thing to do; it is readily and quickly done, and you only need a little cocain when the patient is suffering. I cut down on the opposite side and found this kidney had suffered the same injury that the previous one had. This was also relieved. My patient went on to make an uneventful recovery but I wondered what I was going to do subsequently. She returned to her home but pneumonia set in six weeks later and she died.

One thought which actuates the report of this case is the fact of the simplicity by which I was able to reach these ureters through the lumbar incision under cocain and without depressing my patient.

I recall one case in which the ureter was injured by one of our Fellows, the late Dr. Frederick, of Buffalo. He did an anastomosis of the right ureter, bringing the cut ends of the ureter together through a longitudinal incision and succeeded in getting union. I heard him report that case to this Association quite a number of years ago. This woman died of tuberculosis. At the time of her death she had marked necrosis on the side where the injury took place, but lived for eight or ten years after the repair of the injured ureter by Dr. Frederick.

DR. FURNISS (closing the discussion).—I purposely omitted to mention in my paper what to do other than ureterovesical anastomosis on account of the limited time; but I would like to answer Dr. Goldspohn's question as to what should be done when the ureter is injured.

Coffey claims that if the anastomosis is made in the gut in an oblique manner so as to restore the valve-like action to the normal, the results are good. He states that experimentally he has achieved success on animals by such a method, and that the Mayos have operated on a number of cases in human beings with success. If these are successful, as we hope they are, they are the only successful ones on record of implantation of the ureter into the gut, except where the normal orifice is retained as in exstrophy of the bladder. With that experience in mind there is very little to hope for from such a procedure. The point comes up what to do in case of injury to a ureter where you cannot make an anastomosis. If you have a patient with good kidney function on both sides, but in a poor operative condition, I would ligate the ureter and drop it. If I had a patient with good kidney function on both sides and in good operative condition, I would take the kidney out because of the possibility of a ureteral fistula. If the patient was in poor surgical condition and the renal function poor, I would bring the ureter that is involved out on the skin. The patient might be able to get along for a while with a fistula and two kidneys, but not get along with one kidney.

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THE INFLUENCE OF PREGNANCY ON THE DEVELOPMENT, PROGRESS, AND RECURRENCE OF CANCER.

BY

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(With five illustrations.)

THE two cases herewith reported are significant in relation to the question of the possible influence of pregnancy upon the initiation, progress, and recurrence of cancer in the pregnant individual.

CASE I.—A. B., thirty-eight years old; married; no pregnancies previous to the one herein reported. In November, 1907, a small

FIG. 1.—CASE II. Recurrent sarcoma involving inferior lid and superior maxilla.

lump was first noticed in the right breast. The breast was removed in November, 1910. In February, 1911, a small gland, the size of a pea, appeared above the right clavicle. No treatment was instituted for this, and conditions remained practically the same until December, 1911. About this time the patient became pregnant, and the mass above the clavicle began to grow very rapidly. Another mass appeared in the right axilla. Diagnosis: *Recurrent carcinoma.*

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March 9, 1912, the patient was admitted to my service at the New York Skin and Cancer Hospital. She was then nearly five months' pregnant. A large mass was found in the right axilla and another above the clavicle, with metastases in the right lung.

The danger of continuing the pregnancy was explained to the patient and to the family, but they refused to permit its termination. Operation was advised in the hope of ameliorating the patient's suffering.

In this case the lump above the clavicle was probably not actively malignant until the pregnancy took place.

Treatment with thermoradiotherapy, according to the method of de Keating Hart, was instituted. The patient remained in the hospital until June 21, 1912, during which time the cancer extended rapidly, despite treatment. The patient died February 2, 1913. The baby, born at term, lived one month.

FIG. 2.—CASE II. Growth of orbit, antrum, and nasal fossa.

CASE II.—M. F., thirty years of age; married; two children previous to the present pregnancy. Admitted to the New York Polyclinic Hospital, May 4, 1911. About three months before this she had noticed a small discolored spot the size of the head of a pin, without elevation, just below the inner canthus of the left eye. This developed rapidly and was about the size of the head of a pencil (one by one centimeter), when she was admitted to the hospital. The growth, with an apparently safe margin of healthy tissue, was excised May 5, 1911. Pathological examination showed the growth to be sarcoma. On May 16th, less than two weeks after the excision

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of the growth, a second operation was performed for the removal of a local recurrence. One month later, June 16th, the entire contents of the orbit, together with the periosteum, were removed. On July 7th, a third operation was performed, for the further removal of the recurrent mass, which now involved the walls of the orbit, the base of the nose, and the right jaw.

On July 19, 1911, the patient gave birth to a healthy child. On August 17, she died of exhaustion, the sarcoma evidently involving the brain in its rapid recurrence and extension. At the time

FIG. 3.—CASE II. Soft tissues removed, leaving large cavity.

of the first two operations the patient was advised to permit the termination of the pregnancy, but this was refused on religious grounds. The successive operations were performed for the relief of pain, to lessen the fetor, and to prolong the patient's life until the child was born.

From the dates given, it is seen that the beginning of the development of the sarcoma is closely related to the beginning of the pregnancy, and that the frightful rapidity of development and of recurrence after operation was commensurate with the progress of the pregnancy. Of course, it cannot be stated with assurance that the prompt termination of the pregnancy would have effectually checked the further progress of the sarcoma, after removal of the initial lesion, but such an assumption is permissible, in the light of experience and observation.

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The condition before and after the last operation is shown in the accompanying pictures.

The fact that the coincidental development of the cancer and the fetus did not affect the latter, may be judged from Fig. 5, which shows a well-developed, apparently healthy child, a few days after birth. The subsequent history of the child was not obtainable.

In cases like these, especially like the second, there seems little ground for delaying or for failing to terminate the pregnancy as early as possible. This is in line with experience, as well as with the clinical and experimental observations of others.

FIG. 4.—CASE II. Further recurrence involving mouth, nose, orbit, and face. Patient on operating table for last operation. July 7, 1911.

It is notable, however, that relatively little attention seems to have been devoted to the question of the influence of pregnancy on the development of cancer, other than cancer of the uterus and the breast, particularly the former. A brief résumé of some of the recorded observations follows.

CLINICAL.

The earliest review of the cases of pregnancy complicating cancer of the uterus seems to be that of Chohnstein(1), who, in 1873, collected the previously recorded cases.

Bryant(2), discussing the subject with reference to the breast, reported five cases. "Should the breast of a pregnant woman be the seat of cancer," he said, "the disease as a rule will progress

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rapidly, and should the stage of suckling be reached, its increase will be still more rapid. These cases are happily rare."

Hunter(3), reviewing the subject in 1888, said: "Malignant disease of the vulva, as a primary affection, is rare, and few cases have been observed during pregnancy. It would probably be aggravated, and progress rapidly, as does malignant disease elsewhere."

FIG. 5.—CASE II. Healthy child of patient. July 19, 1911.

"Malignant disease of the vaginal wall, whether primary or secondary, is likely to increase with alarming rapidity after conception has taken place." "Malignant disease of the cervix does undoubtedly often receive a stimulus from pregnancy, and begins to grow with astonishing rapidity, so that within a few months the new-growth may fill the vagina. I have had occasion to amputate the cervix in two such cases before delivery could be effected. In one of these,

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a high amputation had been performed three years previously, and the patient was supposed to have been cured. After becoming pregnant there was a recurrence of the disease." "There seems to be good reason for believing, in the absence of positive proof, that in case of laceration of the cervix, with much hypertrophy and rolling out of the tissues, each additional pregnancy enhances the danger of subsequent epithelioma. Where there is a tendency to malignant disease pregnancy probably increases the liability to its development." "Olshausen believes that ovarian tumors increase in size during pregnancy, and remarks that 'the same fact has been observed in regard to other tumors of the vulva, as well as myoma and cancer of the uterus.' Lücke (*Monatschrift für Geburtshülfe*, 1862, 261) calls attention to the fact that malignant tumors in all parts of the body grow faster in pregnant women. Wernich believes that pregnancy favors the change of benign into malignant tumors."

In 1894, Theilhaber reviewed the cases of pregnancy complicating cancer of the uterus reported from the time of Chohnstein's contribution, in 1873, to 1893.

In 1897, Dakin(4) expressed the following view of the subject: "Pregnancy has a very stimulating effect on the growth of cancer of the cervix, owing to the increased activity of nutrition which is thus established. It has, it is true, been held by some that pregnancy actually retards growth, but it is highly improbable. As against this belief, it is undoubted that cancer grows much more slowly after labor has occurred, and in some cases the symptoms have remained in abeyance for several months after delivery." "Seeing the tendency to rapid growth during pregnancy, and the proneness of the ovum to premature death and expulsion, there is no doubt that in the early months abortion should be induced. As a general rule, the best treatment before the sixth month is to empty the uterus, and then deal with the cancer in the most suitable manner." In the last three months, he holds, it is a question whether labor should be induced and the child extracted, or whether the patient should be allowed to go to term. "The effect of pregnancy on ovarian tumors, whatever their nature, is, as a rule, to make them grow more rapidly.

Shield(5), discussing the question of pregnancy and cancer of the breast, says: "The rapidity with which cancer spreads in the breast of a pregnant woman, and the ravages committed by its sloughing and disintegration, are well illustrated by a case related by Gay, when a cancerous breast in a young woman of thirty-seven increased to an enormous size during pregnancy, and in about ten

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months underwent such sloughing and destruction as to open the pleural cavity in six days.

"This is very similar to Billroth's(6) case, where the disease developed in both breasts five weeks before a confinement, and death occurred in six weeks after observing the disease. The mammæ bore soft vascular tumors of an enormous size, and secondary deposits were universally found.

"In Wilson's case(7) the patient, a lady, aged forty-five, declined operation, and became pregnant for the second time. She died about a month before her confinement, the progress of the disease being fearfully rapid, probably not much more than nine months.

"At consultations at St. Bartholomew's Hospital, a case of the same nature was shown by the late Sir William Savory(8). He believed that pregnancy materially hastened the growth of these tumors. All the surgeons were in favor of removing the breast, although the woman was lactating. The child had been already weaned.

"Horne's(9) case of carcinoma in a parturient woman of thirty-six was peculiarly rapid. Very similar to Wilson's case is another related by Gordon(10), but the disease was not so severe and rapid, and removal was affected with temporary cicatrization. Treves(11) has related a case where cancer of both breasts occurred during pregnancy, with the development of very numerous nodules in the skin. It is not clear that the pregnancy greatly influenced this curious condition." The author refers to Bryant's cases (*q. v.*).

Cullen(12) expresses himself quite positively with regard to the method of procedure in cases of cancer of the uterus complicated by pregnancy. "We thoroughly agree," he says, "with the view of Kaltenbach, that wherever a carcinoma occurs during pregnancy the radical operation, if possible, is to be performed at once, and must not be delayed in order to afford a chance of life to the child. All are agreed that during the early months operation should be performed immediately, but where the woman is in good condition, and the child is within a month or two of viability, the operator is sometimes prevailed upon to wait.

"With our present knowledge of carcinoma, both clinically and from a pathological standpoint, the inclination to yield to their considerations and to delay is rapidly disappearing." "Whenever an operable carcinoma of the cervix is detected, a radical operation should be performed at once. By delay we shall probably sacrifice the mother's life, and at the same time have only a limited chance of saving the child."

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Marx(13), discussing the question of malignancy complicating pregnancy, says: "The plea for an early diagnosis of carcinoma holds good under these conditions, even as it is essential in cases where no pregnancy exists. We might say it is probably even more urgent to diagnose carcinoma during pregnancy than under ordinary conditions, for the stimulus which the uterus obtains from the presence of a fecundated ovum, causing a greater congestion and a more rapid growth of the lymphatics, will, we surmise, be an important factor in the rapidity of the growth of a malignant tumor during pregnancy."

"Once a diagnosis of carcinoma is made, and a successful issue is to be premised, the uterus must be emptied by any measure that serves the mother the best chances. The child cannot be seriously taken into consideration, for in the cases discovered early the period of viability has as yet not been reached."

"Occasionally, there is presented for our consideration a patient who is the victim of a malignant growth in some distant organ not connected with those of procreation, and that patient pregnant at the same time. Generally speaking, there is no indication for us to interfere in these cases. Except that we are to deal directly with the advice to remove the tumor, if removable, we can do nothing except we feel that the pregnancy is an associate evil factor in the case. Then it behooves us to terminate the gestation."

Nijhoff(14), in reporting one case of pregnancy and carcinoma of the rectum, collected twenty-two published cases. He held that as the child is not viable the operator must choose between terminating the pregnancy and waiting until the child is viable. He advocated the former procedure, believing that by waiting an operable tumor might be allowed to become inoperable.

Wertheim, discussing Wilson's(15) paper on cervical cancer and pregnancy, said, in part: "During the past eight years I have had under my care six cases of cancer of the uterus complicated by pregnancy. In only one of them was the pregnancy advanced to full term; in another the pregnancy was in the sixth month; in the other four cases in the first four months. In all six cases I performed the abdominal operation by the method I described here yesterday. As you know, the gynecologists hold that cancer of the uterus, complicated by pregnancy, is specially malignant, on the supposition that pregnancy and labor favor in a particular way the propagation of the disease into the parametrium and lymphatic glands. Therefore, even such operators as still persevere in the vaginal way

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of operating on cancers of the uterus prefer the abdominal way in this complication, in order to make the operation more radical."

Senator and Kaminer(16), discussing the influence of pregnancy and the puerperium on cancer, say: "The opinion was formerly held that the occurrence of pregnancy exercises a very favorable influence upon the cancerous degeneration. V. Siebold maintains even that he has observed a spontaneous cure of genital cancer owing to a supervening pregnancy. French obstetricians, it is true, do not go quite so far, but Pinard, for instance, considers the rapid growth of cancer during pregnancy as by no means proved, and Varnier agrees with him while reporting a somewhat remarkable case: In October, 1897, the presence of an enormous carcinoma of the portio was ascertained in a pregnant woman. The following year there was again a pregnancy, and death did not take place until October, 1900.

"This opinion is interesting in view of Zweifeld's well-known experiment. He marked by means of a loop of thread the borderline between the healthy and the diseased parts in a case of cancer during pregnancy. A fortnight later the disease had progressed by about two finger-breadths, no doubt a proof of the enormous growing tendency in this case."

"On the whole," conclude Senator and Kaminer, "it may be regarded as certain, that with a few rare exceptions, pregnancy and puerperium exercise an exceedingly unfavorable influence on cancer. The permanent hyperemia, the severe relaxation of the tissues, favor a rapid spread of the process to a very great extent, and so an intense aggravation occurs as a rule far more quickly than in the absence of pregnancy, and it becomes impossible for the diseased focus to be completely removed. Or else, as it has been observed in a number of cases, the local destruction makes such rapid progress during the puerperium that the women succumb to their illness in the first few weeks after the confinement, even though the latter has been a comparatively favorable one."

Cheesman(17), in reporting two cases, one of cancer attacking the breast during the course of pregnancy, and the other of pregnancy occurring as a complication of already existing cancer, says: "Whatever theory we adopt as to the nature and etiology of cancer in general, it must be conceded that when located in the female breast its development is influenced by some unexplained sympathetic correlation with the pelvic organs. The clinical fact has long been recognized, and is sometimes mentioned in text-books, that under the physiologic stimulus of pregnancy mammary cancer

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takes on a specially malignant character. And, on the other hand, Beatson by ablating the ovaries in some cases of late inoperable cancer of the breast, was able to effect the disappearance of the disease. So we may say of this mysterious epithelial reproduction, this cellular new birth, that whatever its ultimate character, it may be stimulated to unwonted efflorescence, or retarded and even extinguished, according as the uterus and appendages are rendered active or functionally obsolete."

In the case of pregnancy complicating cancer of the breast, Cheesman states that the breast, lymphatics and muscles were removed by wide circumsection. All went well until nine months after the operation, when the patient reported herself two months pregnant. The uterus was immediately emptied. "But even at the end of the second month we were too late," he said. "Did my pregnancy bring this back again?" asked the patient. "She read the truth, and pierced my conscience with the searching query: 'Then why did you not warn me?'"

Hirst(18), with reference to cancer of the cervix, holds: "If the condition is operable when discovered, the uterus should be extirpated, preferably by the vaginal route, which is always practicable for the first four months. Twenty-nine such operations have been collected without a single death. Dührssen has proposed the evacuation of the uterus by the vaginal route after the fourth month, if necessary . . . . In operable cases the fetus should receive no consideration." "Cancer and sarcoma of the vagina," according to Hirst, "should be operated upon, regardless of the pregnancy, by enucleation of the vagina and by hysterectomy." "Mammary tumors," he holds, "may take on a very rapid growth under the stimulus of pregnancy. A simple adenoma the size of a walnut, quiescent for years, may reach the size of a cocoanut during pregnancy."

De Lee(19) found that of 19,400 consecutive obstetric cases at the Chicago Lying-In Hospital and Dispensary, only one was complicated by cancer of the cervix, which he considered a fair index of the frequency of the condition. "The effect of pregnancy upon cancer," he states, "is unfavorable. Rarely the growth begins after conception; usually the pregnancy supervenes after the cancer has started. Owing to the vascularization and lymphatic imhibition of the cervix caused by pregnancy the tumor grows fast and invades the lymphatics and glands very quickly." Discussing the question of treatment, in such cases, De Lee says: "If an operable cancer of the cervix is discovered in the early months of pregnancy,

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this question arises: In view of the fact that recurrence in such cases is so quick after delivery and the woman, therefore, doomed to early death, would it not be best, in the interests of the child, to wait until the termination of the pregnancy? Pinard, Pozzi, and most French authors say yes, but the German and American authorities believe in the immediate radical operation."

Zimmermann(20), one of the most recent contributors to the subject of cancer and pregnancy, holds that "There are now few who dissent from the general proposition that the occurrence of pregnancy in a woman suffering from any form of malignancy has a tendency almost always to hasten the ravages of the disease. The same is true of tuberculosis or any wasting disease, and is more generally the rule in growths of the breast and uterus, on account of the increased blood supply in these organs during gestation. The already wasted system is unable to stand the burden and strain of prolonged gestation, and there results either a spontaneous interruption of pregnancy, or, if nature fails to come to the rescue, the pregnancy continues at the expense of the debilitated system, the growth makes rapid advance, and the woman shortly succumbs."

From the above brief digest of the subject it is clear that the weight of opinion, from the clinical point of view, substantiates the position that pregnancy exercises a stimulating, and hence a malign influence upon coexistent cancer, not only of the organs most closely concerned in the pregnancy, namely, the uterus and the breast, but of any part of the body, possibly excepting some forms of epithelioma.

Is there evidence, other than clinical observation, of the correctness of this view?

EXPERIMENTAL.

The first to note, experimentally, the influence of pregnancy upon cancer was Morau(21) who, in 1891, published his well-known inoculation experiments with white mice. An animal, inoculated in one breast with tumor material from another mouse, presented nothing unusual at the point of inoculation for about two months. At the end of this time one could establish a slight nodosity at the point of inoculation. This was coincidental with the impregnation of the mouse. During the whole of its gestation the tumor remained stationary, and during the last days one could even believe that a slight regression had occurred. The inoculation was made in June. In September the mouse gave birth to a litter of six young, which were apparently normal and healthy, and which she suckled. From this moment, however, the tumor underwent an extremely rapid

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evolution, soon forming, in itself, almost a third and a half of the total mass of the animal. It could also be noted that the neoplastic mass had undergone, at certain points, hemocystic degeneration, in relation with the rapidity of its development.

Another animal, inoculated at the same time, in the axilla and groin, with epitheliomatous fragments of the same origin, presented nothing abnormal up to September. At this time one could establish the presence, in front of the axillary fold, close below the neck, a small nodosity of the size of a large millet seed. This animal fecundated in September, and gave birth to a litter of eight little ones the first week in October. She suckled them. Aside from the rapid development of the primitive tumor, another small nodule appeared in front of the point of inoculation.

From these two observations Morau concluded that gestation brings about an arrest of evolution of epithelial neoplasms, but that this is only temporary, the development of the tumor afterward being all the more rapid.

In a subsequent communication(22) Morau noted that in animals which were reserved for reproduction, pregnancy had a remarkable influence on the development of the tumors, which, arrested at the beginning of gestation, remained stationary until after delivery, when they took on rapid growth, with hemocystic degeneration, and at times generalization.

In a résumé of his inoculation experiments Morau(23) says, with reference to the influence of pregnancy on cancer: "I have been able to remark, and recent experiments have confirmed my first observations, the influence exerted by gestation upon these neoplasms. Two cases may be presented—either the neoplasm appears in the course of gestation or the latter may supervene when the neoplasm has already begun its evolution.

"In the first case: here there is nothing particular, gestation pursues a normal course and the tumor develops slowly according to its habit.

In the second case, when gestation begins in the course of the evolution of the tumor, the latter appears to experience a period of arrest which is very manifest (one subject in the eighth series; two in the tenth series of 'hereditaires' and two in the fourteenth series). This arrest lasts throughout gestation, and at once, after littering the evolution of the tumor goes ahead with as much increase of rapidity as will offset the greater or less retardation due to pregnancy, as I have observed often in these cases. (See Latuste, 'De la gestation retardée de la souris,' Notes de zooetique des rongeurs). We shall

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then see that the tumor takes on an excessive development, and that the animal falls rapidly into marasmus. One could compare this fact with that which occurs in gestation in the course of pulmonary tuberculosis. We know that terrible impulse which gestation gives to this disease and with what rapidity patients succumb to it. The following fact confirms and justifies all the more, in my opinion, the analogy which I am trying to establish between these two cases. In fact gestation acts on a manifest tumor like a veritable traumatism; therefore, it is not surprising, despite the very rapid extension of the tumor, to see the supervention of their generalization in several cases. It is thus that the subject in the eighth series, upon which the injurious influence of gestation was so manifest that it had struck me very peculiarly, did not hesitate to present a series of small nodosities developed far from the point of inoculation, in such fashion that at death four distinct neoplasms were present. Under the influence of trauma determined by gestation and lactation these had been a veritable generalization of the neoplasm."

Following Morau's observations other research workers made similar reports. Thus, Loeb(24) states that "In the original piece and in the piece transplanted into the same rat, pregnancy induced a large increase in the size of the tumor, especially in the glands."

In a recent communication Loeb(25), discussing the various factors which initiate and stimulate tumor growth, under the head of *chemical formative stimuli*, says: "From the data which are accumulating, it may be possible in a provisional way to classify these chemical stimuli into (*a*) general stimuli, applying indiscriminately to a large number of tissues; (*b*) specific stimuli acting only on specific tissues. Chemical factors of the former kind are probably operative in *young* organisms, in contradistinction to old ones, and during pregnancy. In the last-named condition not only factors favoring growth are apparently at work, but also factors antagonistic to growth. The balancing between these two forces seems to lead to a different result in different species. Thus in the rat, pregnancy seems to favor growth of embryonic tissues under certain conditions; in the mouse, it is unfavorable to such growth. Tumor growth is affected in a way similar to normal tissues by the chemical conditions prevailing in young and old organisms respectively. The difference in the growth of certain organs in young and old animals seems to depend on substances circulating in the body fluids. Analogous substances seem to hasten or to delay growth phenomena associated with metamorphosis in amphibia. There is also some indication that during pregnancy

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spontaneous tumors may assume a marked increase in size in the rat, while in the mouse, pregnancy is an unfavorable factor, especially for the growth of transplanted tumors. In future it will be necessary to distinguish more sharply than has been done in the past between the effect of pregnancy on the growth of spontaneous and of transplanted tumors."

Roux studying the effect of pregnancy on implanted embryonic tissue, says: "The effect of pregnancy of the host on implanted tumor has been the subject of many observations; and it has been found that, in general, the growth of the neoplasm is retarded during gestation and may cease. The cause for this retardation is not known." Roux refers, in this connection, to the work of Haaland, Uhlenhuth and Weidanz, and Cuénot and Mercier.

Herzog(26), working with white rats, found: "In two of the animals operated upon the tumors grew quite slowly. In one, a pregnant female where a piece had been implanted subcutaneously into the lower abdominal region, the tumor grew quite rapidly. This female gave birth to a litter of young ones, which she raised successfully in spite of a growing tumor. Pregnant females were subsequently repeatedly subjected to implantation of pieces of tumors. It was invariably found that when a piece was implanted subcutaneously into the abdominal region of a pregnant female, the tumor grew with unusual rapidity, attaining a large size in two or three weeks. About thirty to forty young ones were successfully raised from such females; not one of these young ones has spontaneously developed a tumor."

Apolant(27), commenting upon certain conclusions drawn by Levin and Sittenfield, of the Crocker Laboratory ("Studies on Immunity in Cancers of the White Rat," *Jour. Exper. Med.*, 1911, xiii, 511), said: "It should be further noted that Drs. Levin and Sittenfield misinterpret some of the facts and fail entirely to mention others which demonstrate the existence of athrepsia. The former applies to their presentation of the relation of tumor growth to pregnancy. They refer on the one hand to Haaland (*Berl. klin. Wchnschr.*, 1907, xliv, 713), who first observed the resistance of gravid animals to tumor inoculation, and on the other to Herzog (*Jour. Med. Res.*, 1902, viii, 74), who described a more rapid growth of the tumor in the course of pregnancy. They conclude immediately from these observations that pregnancy simply inhibits the take of an inoculated graft, but that it stimulates the growing tumor to stronger proliferation. This conclusion is entirely arbitrary, and rests on a mistaken citation. For Herzog speaks not

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of tumor-bearing animals, which became pregnant, but of inoculation of pregnant animals. On the other hand, Cuénot and Mercier found that the beginning of tumor growth can be temporarily inhibited by the onset of pregnancy, and by lactation, only to proceed thereafter in a normal manner. The apparent inconsistencies in the observed relations between pregnancy and tumor growth are probably explained, as Fichera has already observed, by the fact that, if numerous embryos are present, the specific food stuffs, which are often the same for embryos and for tumor cells, are almost wholly demanded by the former, but that, on the other hand, when only a few embryos are present, the production of the specific foodstuffs, increased by pregnancy, comes to benefit the tumor cells also. It is reasonable and entirely consistent with the principle of athrepsia that occasionally an already strongly growing tumor should draw still more strongly on the food stuffs abundantly produced at the advent of pregnancy, and so grow still more quickly."

Woglom(28), reviewing the special phase of cancer under discussion, said: "It has been asserted and denied that the existence of pregnancy rendered animals less susceptible to implantation; and although Morau and Herzog had written that gestation accelerated the evolution of tumors, and Bashford and Murray that 'Pregnancy and full sexual activity in the male (as determined by microscopical examination of the testes) constitute no bar to successful transplantation,' Haaland, on the contrary, had found that pregnancy often exerted an inhibitory influence upon the proliferation of tumors, the effect of which was to produce a striking retardation of their growth in pregnant animals as compared with animals not bearing young. Uhlenhuth and Weidanz had also observed this retardation and furthermore, that spontaneous regression occurred oftener in pregnant mice.

"Bridré chose males for inoculation whenever it was possible because of the low percentage of positive inoculations occurring in pregnant females, while Ehrlich had noticed repeatedly that inoculation into animals bearing young was followed with extraordinary frequency by negative results, or was, at least, attended by the development of tumors in which growth was greatly retarded.

"Pregnancy, according to Albrecht and Hecht, whether already present at the time of inoculation, or commencing afterward, influenced the establishment of a tumor or its subsequent growth just as little as the presence of a tumor influenced conception or pregnancy." "Fichera explained the inconsistencies that had been observed in the relations between pregnancy and tumor growth by

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assuming that when many embryos were present the specific food stuffs were almost wholly demanded by them, while if there were but few the nutrient material was available for the tumor cells as well." It is pointed out that Ehrlich considered that the negative result attendant upon the inoculation of pregnant animals, or the slow growth of such tumors as did occur, was added evidence in favor of the hypothesis of athrepsia.

CONCLUSIONS.

From the cases herewith reported, from the clinical observations, as portrayed in the foregoing digest of the reports of some of those who have contributed to the subject, and from the experimental data presented, the following conclusions in relation to the human subject seem justified:

(1) That pregnancy increases the rapidity of growth of coexistent spontaneous cancer.

(2) That if, as some contend, there is a retardation of the malignant process during gestation, the significance of this manifestation should not be misunderstood. Rapid increase of growth may follow delivery.

(3) That while the stimulating effect of pregnancy is exerted more markedly upon the organs directly concerned with the pregnant state, cancer in any other part of the body, as in Case II, may be influenced in like manner.

(4) That, if the cancer is removable, in order to secure the best chance of permanent cure, the pregnancy should be terminated, regardless of any consideration for the child.

(5) That, even in advanced cases of malignant disease, in which there is no hope of cure for the mother, it is a question whether she should not be given whatever chance of prolongation of life and, more important, mollification of suffering abortion may give.

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DISCUSSION.

DR. GORDON K. DICKINSON, Jersey City, N. J.—Yesterday I made the remark that there is a terrible conflict between the germ plasm and brain plasm. We think a great deal of our brain, of our intellect, of our thought. We are proud of a paper such as we have heard this morning from our President, and we sit around and pride ourselves that we have brains enough to comprehend the wonderful harmony of words and the noble thoughts and the facile expressions. We do not know but what Dr. Bainbridge may have written his paper thirty times before he was through with it. At any rate, he did not write it in a hurry. He knew the class of people he was going to read it to. He felt it was an honor and he has lived up to his duty. Like Dr. Bainbridge, we read the old books and we find that the authors thought the same thoughts, had the same ideas,

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and they knew as much as we do. They looked at things merely from a somewhat different viewpoint.

Over on the other side they are killing people by the hundreds of thousands and millions, and we think nothing of it. We call it patriotism. The biologist has his viewpoint and he shows us that we are here for one purpose and that is to breed children. Another class will tell us that he who does not marry and have children is committing the biggest crime that is known against God. Really, we are conceited. We think we are here for the one purpose. The doctor believes in a sort of germ plasm and not a soul plasm. The latter is for our entertainment, to make life agreeable. We are here to have children. Have we a right for any purpose to destroy children? Let us suppose a woman of thirty has perhaps thirty years more to go and the baby is sick, see what we are doing. We are depriving the world of that thirty years. The biggest things, the most original things are done by people between twenty and thirty. It is the time when they want to think. When they pass thirty they do not amount to much unless it is a woman having a baby. I cannot solve this problem. Should I abort a woman in order that she may have one more baby, or should I allow the baby to go? That baby is far more important in my estimation than the woman, because it is younger.

Dr. Edward A. Weiss, Pittsburgh.—Regarding so-called therapeutic abortion I have little to offer in addition to the views I expressed in a paper entitled "Some Moral and Ethical Aspects of Feticide," which I read at a meeting of this Association a few years ago. I maintain that it is the duty of a physician to save life, not to take it. This is not a place for a religious or moral discussion, but the profession is open to a great deal of criticism nowadays because members of it are taking upon themselves too much regarding the life of the unborn. If a physician is in a position to say that he can positively save life by inducing abortion then possibly there is some justification for him to abort a woman if the family does not object or if she has no religious scruples. Until such time comes, however, when he can make that positive assertion the physician is arrogating to himself powers to which he has no right.

Dr. Edward J. Ill, Newark.—When I had the honor of being President of the Association, I put my position very clearly on record. I had at that time never produced an abortion for any condition and I had never regretted it. I have since done it three times. In one instance I sat at the bedside of a woman for forty-eight hours, hoping she would get relief before abortion was done. Another time it was a clergyman's wife; I spent most of a day in the hope of relieving her, and finally we had to induce abortion. The third case has escaped my mind.

I want to speak of the doctor's paper in regard to malignant tumors. A good deal depends upon the nature of the malignant tumor. Let us take a concrete case. A woman is pregnant six months, with a large tumor in the abdomen. On opening the abdomen the tumor is taken out. We find that the tumor is

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perfectly smooth in outline, absolutely free from any taint of anything else than what we see in the ordinary dermoid. I heard the great Schroeder say at one time that "I remove nothing except for palpable disease." I have never removed an ovary except for palpable disease. Twenty-five or thirty years ago, when ovaries were removed for every sort of thing, I never removed ovaries. In this particular case I saved some ovarian tissue; I always do it when I can. I removed the rest of the tumor and closed the wound up. When we examined the tumor in the laboratory I found it was a papilloma of the ovary. I have seen these tumors again and again, and as long as the growth has not broken through its exterior wall, although a malignant tumor, that tumor is not the subject of local or general infection. This case was operated on two and a half years ago and the woman is well. She miscarried six or eight weeks after operation, which had nothing to do with the operation. She has just been delivered at term of a normal child. That is one form of cancer. The cancer that you see here is an entirely different form of cancer; it is very malignant; I do not know whether producing abortion would have improved this condition or not. The doctor thinks it would. We all know that if a woman has cancer of the cervix and aborts or gives birth to a child at term, the cancer spreads tremendously. There is no question about it. It will spread just as much if you open the woman's abdomen and remove the fetus through the uterus, either at term or earlier.

Dr. James E. Davis, Detroit.—There is a peculiar paradox to be considered in connection with this subject that Dr. Bainbridge has brought before us, that is, we all consider that a malignant growth will be hindered in its rapidity if we can bring the patient into the best possible condition of resistance. In other words, if the anabolic processes of the body can be brought to the highest possible point of perfection, we expect that the malignant growth consequently will be slow in its development and in fact there are instances where a malignant growth may cease altogether because of the very marked anabolic resistance of the patient. During the usual conditions of pregnancy we expect the anabolic processes to be as much in the ascendency as the catabolic processes. This is especially so in the latter months of pregnancy. It does not seem possible to have these patients continue after the conclusion of pregnancy, in anabolic metabolism excepting in the local increase of the malignant growth. At the conclusion of pregnancy then we have a curve indicating catabolic change in the metabolism of the mother. There is now every reason to expect that the malignancy will increase.

One other point may be mentioned which refers to our present method of determining whether a growth of certain cells has reached the malignant stage or not by ascertaining whether the cells have penetrated below the basement membrane. The limitation of the new growing cells decides our diagnosis of malignancy.

Since Dr. Bainbridge has exhibited and praised an old book, I have also profitably consulted and will quote from in my paper of

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to-morrow, Burn's little volume on "Abortion," which is over 100 years old, yet the anatomy of the subject is here quite as accurately given as in any book published within the last ten years.

Dr. J. Henry Carstens, Detroit.—I have had a couple of cases of pregnancy with cancer of the uterus. I operated on one of them before the members of the American Medical Association in Detroit in 1893. I did not know the woman was pregnant. She had a large cauliflower growth, had been flowing for about two months, and I did a vaginal hysterectomy. When I opened the uterus afterward I found a six-weeks pregnancy. She made an apparently complete recovery as after any operation, but died nine months later. I had another case later that was five months pregnant; I removed that also by a vaginal hysterectomy, doing both operations with the clamp, which I prefer, because it cuts off the circulation and does not allow the cancer cells to go into the blood current.

Does the production of an abortion help the woman in such a case as Dr. Bainbridge has reported? If we can show that it will often check the growth of cancer, the woman's life is prolonged and her suffering diminished, I think we are perfectly justified to produce an abortion in such cases, or bring on premature labor, or do as I did, remove the whole uterus with the malignant growth. As long as we cannot prove it does any good, then certainly it is a grave question. When it comes to a religious question, if I know I can help, I must say that I have no compunctions about producing abortion. I will do it instantly if I know that woman is going to die from pernicious vomiting, or if I know she is going to die from eclampsia, if I do not interrupt pregnancy. That woman may have two or three little children, who need her very much for the next fifteen or twenty years, and if I can save her life so that she can take care of those children, then I will commit abortion.

Dr. Asa B. Davis, New York.—It has been our observation that pregnancy and the puerperal state complicated by malignant growths, give a very decided impetus to the development of such growths. If these growths are active the patient rarely survives beyond a period of six months after the discovery. Early in our experience, while an interne in a cancer hospital, a case which strikingly illustrates this came under our care.

A young woman was admitted for treatment of abscess of the left breast. Her first pregnancy had been interrupted at about five months, a short time before her application for treatment, she stated. The abscess involved a large part of the breast and extended well up into the axilla. The abscess was freely incised and a large quantity of pus evacuated, with the full expectation that healing would progress as usual after an abscess. There was no idea that we were dealing with malignancy in the case of this young woman. Yet there was no attempt at healing. The disease spread; the breast and axilla were soon an active cauliflower-like growth. The patient was dead in six weeks from the date of her admission, from general carcinomatosis and after great agony.

Other cases have confirmed our belief that whether we abort

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pregnant women who are victims at the time of malignant disease, or do not do so, pregnancy has given a tremendous impetus to the developing malignancy and the patient is usually dead within six months, very often even sooner.

DR. BAINBRIDGE (closing the discussion).—I knew that the character of my paper was such that it would elicit an excellent discussion, and in it I emphasized certain points with malice aforethought. I spoke not from an experience of having had a few cases, but from an experience that has extended over ten or eleven years at one of the largest cancer clinics in America. I was engaged in collecting for my records something like 12,000 cases of growths of various kinds and making practical deductions until the war interrupted the work.

The deductions I have drawn are not only in accordance with my own experience but the experience of many others as set forth succinctly in the paper.

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THE CAUSES OF DEATH IN CHILDBIRTH; MATERNAL MORTALITIES IN 100,000 CONFINEMENTS AT THE NEW YORK LYING-IN HOSPITAL.

BY

JAMES A. HARRAR, M. D.,

New York.

THE vital statistics of childbirth in the community in general are reasonably open to considerable suspicion. Deaths from puerperal infection are often crowded in under the heading of typhoid or pneumonia by the medical attendant, or an unrecognized rupture of the uterus goes down on the certificate as postpartum hemorrhage, or later as peritonitis. On the other hand, hospital statistics are unavoidably exaggerated both in the frequency of abnormalities and in the death rate, on account of the contamination of the figures by the great number of serious referred cases.

This is particularly so at the New York Lying-In Hospital, where no woman is refused admission, no matter how ill she may be. Many women have been received in a dying condition, and forty women have died within less than an hour after their admission, of the hemorrhage, convulsions, shock or sepsis, for which they were sent to the hospital by their attending doctors or midwives. Three hundred and fifty-six of the deaths recorded have been among our postpartum admissions. Naturally in these deaths, and also in those among the emergency cases entering the hospital far advanced in labor, we feel that our responsibility is most fragmentary, and we cannot hold ourselves wholly accountable for the unfortunate outcome.

However, it is instructive to us to review the various causes of death in childbirth where the intensive hospital study of the sick woman and occasionally postmortem examination enable us to reasonably determine the true cause of death.

It is in the outdoor service especially that we are able to appreciate the approach to the irreducible minimum to be obtained in private practice and where the figures are not distorted by the inclusion of the emergency failures of others.

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From the organization of the service of the Lying-In Hospital in 1890 until July, 1917, the institution has cared for, in the wards and in the homes of the patients, 115,439 women. Of these 7213 were gynecological ward cases and women late in the puerperium; 37,483 were parturient and recent puerperal admissions to the wards, and 70,743 were labors conducted in the tenements.

On the indoor service, abortions, ectopics, women less than ten days postpartum, and parturients at term, are all classed under the somewhat arbitrary term "confinements." Subtracting the necessary percentage, the number actually confined at or near term indoor was 32,116. Of these, 23,130 were regular applicants, applying for examination and advice one to three months before labor, and 8,986 were emergency labors. The latter include both those who had not previously applied to the hospital, and cases of dystocia referred in by their unsuccessful medical attendants.

Of the 70,743 confinement cases on the outdoor service, 1,662 were abortions, leaving 69,081 confinements in the outdoor at or near term. In all 101,197 actual confinements at or near term have been conducted by the hospital, and it is with the mortalities in these that we are especially interested.

For purposes of study it is necessary to divide the mortalities into groups. In the outdoor service, in 69,081 actual confinements, 218 women died. Of these 218, 137 died in their homes, and 81 after transfer into the wards of the Lying-In or other hospitals, so that 218 is the full maternal mortality in the tenement service to date. This represents one death in every 317 women confined, or 0.31 per cent. mortality.

In the last eight years the maternal mortality of the outdoor tenement service has fallen from one death in every 312 confinements to one death in every 326 confinements.

On the indoor service, of 23,130 regular applicants confined, 109 died. This is one death in every 212 women confined, or 0.47 per cent. One important reason for the somewhat higher mortality among the indoor regular applicants over the outdoor is the much greater proportion of primiparæ on the indoor service. In the tenement service twenty out of every 100 labors are primiparæ, while on the indoor service forty-eight out of every 100 are primiparæ.

When we consider the emergency cases confined in the hospital, the death rate rises tremendously. These were women who either had never submitted to an antepartum examination or to prenatal care, or who were sent in by their midwives or doctors after failure to deliver. Among these 463 died, one in every twenty

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deliveries, or 5 per cent. The comparison between the mortality of the regular applicants and that of the emergency labors is a striking commentary on the necessity and value of the prenatal examinations and advice that the Lying-In Hospital has afforded its regular applicants during the past twenty-five years.

While we believe our death rate to be low, both in our outdoor confinements and in our regular indoor applicants, it is disconcerting to find that even in these selected groups the predominating cause of death is puerperal infection. The one element of mortality in obstetrics, of which we are inclined to boast, and that we ought to have most certainly under our control, causes more than twice as many deaths as any other single complication. There were twenty-three deaths from puerperal infection among the 23,130 regular applicants confined indoor, and fifty-nine deaths from puerperal infection among the 69,081 outdoor confinements; a mortality of 0.95 per thousand, and 0.85 per thousand, respectively.

In the deaths occurring among the postpartum admissions and the emergency labors handled by a succession of midwives and doctors before admission, considerably more than one-third died of puerperal infection.

Eclampsia ranks second on the list as a cause of maternal death, accounting for ten deaths among the indoor regular applicants, or 0.43 per thousand confinements and for twenty-six deaths on the outdoor service, or 0.37 per thousand confinements.

The third most frequent cause of death is peritonitis after the performance of Cesarean section. Thirteen deaths occurred among the indoor regular applicants and three among the outdoor cases referred into the hospital for Cesarean. These deaths might reasonably be included under the heading of puerperal infection.

Next in importance come rupture of the uterus and placenta previa. Our results in placenta previa are better among the indoor regular applicants than among the outdoor, and of late years all cases of placenta previa occurring on the outdoor service are transferred indoor, if possible, for delivery. Five died of placenta previa among the indoor regular applicants, 0.26 per thousand, and twenty-five among the outdoor applicants, or 0.36 per thousand. Of ruptured uterus, there were five deaths indoor and twenty deaths outdoor, or 0.26 per thousand and 0.28 per thousand.

Deaths from nephritis, broken cardiac compensation, pneumonia, shock and exhaustion from prolonged labor, and postpartum hemorrhage rank next. Then come deaths from shock and hemorrhage after Cesarean section, tuberculosis, acute toxemia of pregnancy

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without convulsions, and accidental hemorrhage, they are in the order named.

The lesser causes, explaining from one to three deaths each, are abdominal pregnancy, rupture of the vaginal vault, pulmonary embolism, and thrombosis, cerebral hemorrhage, appendicitis complicating late pregnancy, suicide in acute mania, carcinomatosis, brain tumor, sarcoma of the liver, and ether and chloroform narcosis. And, finally, there is a considerable number, about one-tenth of 1 per cent. of the total number of deaths, who died suddenly of unknown causes; the majority of these being put down on the reports as due to pulmonary embolism, but without autopsy for verification.

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THE MATERNAL AND INFANT MORTALITY IN MIDWIFERY PRACTICE IN NEWARK, N. J.

BY

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FOR many physicians, especially some noted obstetricians, there is no midwife problem; they have long since settled the question by vehement condemnation of the midwife and the recommendation that all who engage midwives from tradition or economic necessity should be delivered in finely appointed hospitals at public expense.

At the infant mortality convention in Philadelphia, a few years ago, an obstetrician, in a paper on "Ideal Obstetrics," declared that "the midwife is a relic of barbarism;" "a brand of infamy;" "it is impossible to train a midwife sufficiently to make her a safe person to attend cases," and again "the midwife is innocent of the high mortality she causes among mothers and babies." Several obstetricians present at that meeting approved of these sentiments and have spoken similarly since. These statements, if founded upon fact, challenge the attention of every public health official and it was with the purpose of determining whether local conditions were such as the previous remarks would lead us to believe, that this study was made.

Maternal Mortality.—It appears that the maternal mortality in Newark among midwife cases is no higher than in the city as a whole and really lower than in many other cities or countries. In the study of Maternal Mortality for the Children's Bureau at Washington Dr. Meigs gives the following rates:

		Puerperal deaths per 1000 live births
Italy	1910–13	2.4 or 1 in 417
Hungary	1908–11	3.6 or 1 in 277
England & Wales	1910–14	3.7 or 1 in 270
New Zealand	1910–14	4.0 or 1 in 250
Australia	1910–12	5.0 or 1 in 200
Ireland	1911–14	5.2 or 1 in 192
Switzerland	1909–12	5.3 or 1 in 188

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For the principal cities in the registration area of the United States, in 1910, the rate varied from 1 in 500 mothers in Fall River, and Worcester to 1 in 178 mothers delivered in Grand Rapids. In Newark in 1914, the maternal mortality was 5.3 per 1000 births; in 1915, 3.6, and in 1916, 2.2. In other words, in 1914, 1 in every 188 mothers lost her life in childbirth, while in 1916 1, in every 454 mothers lost her life in childbirth. These figures indicate that there has been a considerable reduction of maternal mortality in the three years that the Department of Health has maintained supervision over midwifery, and that in 1916, with approximately 50 per cent. of the births attended by midwives, the rate of the city of Newark was among the lowest in the country.

It is of interest to contrast this record with that of Boston, where we are told the midwife does not exist, I suppose we had better say officially. Here one mother out of every 153 died in childbirth. Of the large cities, from which I have received reports for 1916, only New York showed a better record than Newark.

MATERNAL DEATHS IN 1916 PER 1000 BIRTHS FOR CERTAIN LARGE CITIES IN THE UNITED STATES.

City	Rate per 1000 births
Newark	2.2 or 1 in 454
Buffalo	3.2 or 1 in 312
Detroit	3.7 or 1 in 270
New York	4.6 or 1 in 217
St. Louis	5.2 or 1 in 192
Cleveland	5.6 or 1 in 180
Boston	6.5 or 1 in 153
Baltimore	6.8 or 1 in 147
Philadelphia	7.0 or 1 in 143

We determined the influence of midwifery practice on maternal mortality in a more direct way. We followed up, until one month after birth, 586 mothers who had received prenatal observation from our Department and then were delivered by midwives. In this group one mother died, showing a record better than that of the city, as a whole. We also investigated forty-one puerperal deaths reported by physicians to determine if there was any foundation for the impression that puerperal deaths that occurred in the hospitals or in the practice of physicians are often the result of midwifery incompetence, ignorance and neglect, the cases being referred, it is claimed, to hospitals or physicians when all the mischief has been done. Of the forty-one cases it developed that in only ten had a

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widwife been in attendance *at any time* and in no instance did the doctor claim that the midwife was in any way responsible for the result.

When we recall that midwives attend 50 per cent. of all the births and as much as 88 per cent. of some foreign born groups living in congested quarters, there seems to be little ground for the charge of high maternal mortality among the midwives, at least in Newark.

Infant Mortality.—If the midwife is the cause of much infant mortality, Newark should have a high infant mortality rate, for midwives attend 50 per cent. of all our births and from 55 to 88 per cent. of foreign born mothers. In 1916, the infant mortality rate in Newark was 89.6; New York, 93.1; St. Louis, 84; Philadelphia, 101; Boston, 104; Cleveland, 106.9; Pittsburgh, 109.2; Detroit, 112.8; Buffalo, 113.9 and Baltimore 118.1.

Is the infant mortality higher among infants whose mothers are attended by midwives?

To determine this fact we traced the attendant at birth of 1247 infants that died during 1915 and 1916, and found that quite the reverse was true. Midwives attended 49 per cent. of the births, and had been the attendant at birth of only 49 per cent. of the deaths under one year; physicians attended 39 per cent. of the births and had been the attendant at birth of 36 per cent. of the deaths under one year, hospitals delivered 12 per cent. of the births but had attended 15 per cent. of the deaths under one year.

That the infant mortality is lower among midwife cases and highest in hospital cases is shown better by the following rates.

INFANT MORTALITY FOR INFANTS ATTENDED AT BIRTH.

By midwives	70.7 per 1000 births.
By physicians	74.3 per 1000 births.
In hospitals	97.4 per 1000 births.

It may be argued that the effect upon the infant of good and poor obstetrics would appear principally in the deaths under one month of age and that in this group we will find the highest mortality among the births attended by midwives. Strangely enough, it appears that especially in this age group the infant mortality is lowest for infants attended by midwives and highest among those delivered in hospitals. Of 763 deaths under one month of age, midwives attended the births of only 36 per cent., although they attended 49 per cent. of all the births of the city; physicians attended the

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births of 44 per cent. of the deaths under one month and 39 per cent. of all the births of the city; while hospitals delivered 20 per cent. of the babies that died under one month of age but attended only 12 per cent. of all the births of the city.

These results will be better appreciated, perhaps, if presented somewhat differently. Of the babies attended by midwives, 25.1 per 1000 births died before the age of one month; of those attended by physicians, 38.2 per 1000 births died before the age of one month; and of those delivered in hospitals, 57.3 per 1000 births died before the age of one month.

These figures certainly refute the charge of high mortality among the infants whose mothers are attended by midwives, and instead present the unexpected problem of explaining the fact that the maternal and infant mortality for the cases attended by midwives is lower than those attended by physicians and hospitals.

It was suggested that perhaps these apparently favorable results with midwife cases may be explained by the fact that hospitals and physicians deliver a larger proportion of primipara among whom the dangers to mother and baby are admittedly greater.

Of 5702 births in Newark for six consecutive months in 1916, 29.8 per cent. were primipara, and 70.2 per cent. were multipara, and the midwives attended 29 per cent. of the primipara, physicians 47 per cent. and hospitals 23 per cent. From this we see at once that while midwives attend about one-half of all the births, they attend less than one-third of the primipara, and that while hospitals attend about one-ninth of all the births, they receive about one-fourth of the primipara.

Furthermore, the smaller proportion of primipara among foreign-born mothers may explain the better results reported in midwife cases, as it so happens that the largest part of midwifery practice is among the foreign-born mothers with the smallest proportion of primipara.

Nativity of mother	Percentage, primipara	Percentage attended by midwife for each nativity of mother	Percentage distribution of midwife cases by nativity mother
Italian	15.1	89.2	40.8
Russian	25.6	48.6	12.4
Austrian	27.7	75.8	24.1
United States	39.5	21.8	16.3

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Likewise, the fact that the infant mortality rate is lowest among the group of foreign-born mothers who are mostly attended by midwives is partly explained by the fact that it is these same groups that have the smallest proportion of primipara.

Deaths under one year per 1000 births for two-year period, 1915–1916, for nativity of mother were as follows, viz.:

Nativity of mother	Proportion, primipara	Infant mortality rate	Percentage attended by midwives
United States.....	39.5	97.7	21.8
Austrian.....	27.7	89.2	75.8
Italian.....	15.1	84.3	89.2
Russian.....	25.6	70.2	48.6

Among infants born of primipara the mortality is lowest for those attended by physicians. Midwives attend 29 per cent. of the primipara but 32 per cent. of the deaths of infants under one year among primipara had been attended at birth by midwives. Physicians attended 47 per cent. of the primipara but only 43 per cent. of the deaths under one year among primipara had been attended by physicians; hospitals delivered 23 per cent. of the primipara but 24 per cent. of the deaths under one year among primipara had been delivered in hospitals.

The high infant-mortality rate of infants of mothers delivered in hospitals is further explained by the high proportion of primipara *of all nativities* delivered in hospitals. Of United States mothers there were delivered in hospitals 28 per cent. of the primipara and 14 per cent. of the multipara; of Russian mothers 21 per cent. of the primipara and 10 per cent. of the multipara; Austrian mothers 14 per cent. of the primipara and 2 per cent. of the multipara and of the Italian mothers 1.6 per cent. of the primipara and 6 per cent. of multipara.

It is of special interest to note here again that very few of the Italian mothers are delivered in hospitals; that 88 per cent. are delivered by midwives; that 85 per cent. of primipara of Italian mothers are delivered by midwives and that the infant-mortality rate of babies of Italian mothers is one of the lowest of all national groups.

I have been careful to present the data in reference to primipara so that we may have all the facts before us upon which to base a

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proper judgment of the relation the midwife occupies to the problem of maternal and infant mortality and that we may be willing and able to pass judgment without prejudice or bias of any sort.

The results of midwifery practice in Newark may seem sufficiently favorable to permit a short statement of what has been accomplished during the past three years through the supervision of our Department.

In 1914, there were ninety-nine midwives of whom seventeen were practising without a license; thirty reported births late; twenty frequently failed to report births at all; sixteen carried instruments contrary to law, such as uterine forceps, hypodermic syringes, hard rubber catheters, specula; nine carried drugs such as laudanum, strychnine, arsenic; seventy admitted that they did not send for a physician when presented with slight abnormalities during pregnancy or labor; twenty admitted that they did not use silver nitrate in the eyes of the new-born; twenty-five midwives did not carry thermometers, but claimed that they were quite competent to determine the temperature by taking the pulse; thirteen were suspected of being abortionists.

It was also learned from the records that ten of the midwives delivered more than 50 per cent. of all of the midwife cases; three, delivered twenty a month; two, more than thirty cases a month; and one, delivered as many as fifty cases a month.

With these facts in hand we set about through conferences, lectures and personal visits to the midwives and to their cases to inform the midwife of what she may do under the law and how she should conduct herself and her cases to the best interests of herself and her patients.

A few contrasting figures will be sufficient to indicate what has been accomplished, and also, I suppose, what still remains to be accomplished.

In 1917, we had ninety-six practising midwives, instead of ninety-nine, of whom two are unlicensed instead of seventeen. These two midwives have been practising over twenty-five years, are of good repute and attend only a few cases each year. All midwives carry silver nitrate in their bags and from all reports and observations use it in the eyes of every new-born baby. Of course, it is difficult to be positive about this, but the small number of ophthalmia cases in midwifery practice seems to bear out this report. In 1916, of eighteen cases reported, midwives had been in attendance *at any time* in five cases only. When we recall that they attend 50 per cent. of all the births and practice especially in the families where

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TABLE I.—MATERNAL AND INFANT MORTALITY AMONG MOTHERS WHO RECEIVED PRENATAL SUPERVISION FROM CHILD HYGIENE DIVISION AND WERE DELIVERED BY MIDWIVES, NEWARK, N. J., 1916.

Mothers delivered by midwives	Maternal deaths			Deaths of babies under one month			Stillbirths		
Number	No.	Rate	City rate	No.	Rate	City rate	No.	Rate	City rate
586	1	1.7	2.2*	5	8.5	36.4	4	6.8	41.7

* Or 1 in every 454 mothers died in childbirth.

TABLE II.—MATERNAL DEATHS PER 1000 LIVE BIRTHS IN CERTAIN COUNTRIES, AND LARGE CITIES IN THE UNITED STATES.

Countries	Years	Death rate	Cities	Year	Death rate
Italy.....	1910–13	2.4 or 1 in 417	New York....	1916	4.6 or 1 in 217
Hungary.....	1908–11	3.6 or 1 in 277	Newark.....	1916	2.2 or 1 in 454
England and			Buffalo.....	1916	3.2 or 1 in 312
Wales.....	1910–14	3.7 or 1 in 270	Detroit.....	1916	3.7 or 1 in 270
New Zealand..	1910–14	4.0 or 1 in 250	St. Louis.....	1916	5.2 or 1 in 192
Australia.....	1910–12	5.0 or 1 in 200	Cleveland....	1916	5.6 or 1 in 180
Ireland.....	1911–14	5.2 or 1 in 192	Boston.....	1916	6.5 or 1 in 153
Switzerland...	1909–12	5.3 or 1 in 188	Baltimore....	1916	6.8 or 1 in 147
			Philadelphia..	1916	7.0 or 1 in 143

Forty-nine per cent. of the births in Newark were attended by Midwives.

TABLE III.—DEATHS UNDER ONE YEAR AND UNDER ONE MONTH PER 1000 BIRTHS BY ATTENDANT AT BIRTH FOR 1915–1916, NEWARK, N. J.

Year	Attendant at birth							
	All attendants		Midwife		Physician		Hospital	
	Under 1 year	Under 1 month	Under 1 year	Under 1 month	Under 1 year	Under 1 month	Under 1 year	Under 1 month
1915	85.3	35.4	58.9	24.1	79.4	37.0	88.9	50.1
1916	89.6	38.0	82.2*	25.9	70.6	39.4	105.1	64.1
For two-year period.....	87.5	36.4	70.7	25.1	74.3	38.2	97.4	57.3

* Epidemics of poliomyelitis, measles and influenza.

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TABLE IV.—DEATHS UNDER ONE YEAR PER 1000 BIRTHS BY NATIVITY OF MOTHER FOR EACH YEAR AND THREE-YEAR PERIOD, NEWARK, 1914–1916.

Mother born in	Year											
	3-year period, 1914–1916			1916*			1915			1914		
	Births	D'ths under 1 yr.	Inf. Mort. rate	Births	D'ths under 1 yr.	Inf. Mort. rate	Births	D'ths under 1 yr.	Inf. Mort. rate	Births	D'ths under 1 yr.	Inf. Mort. rate
United States...	13,478	1,317	97.7	4,685	424	90.5	4,391	401	91.3	4,402	492	111.7
Italy.....	7,575	639	84.3	2,431	228	94.1	2,519	179	71.0	2,625	232	88.0
Austria...	4,843	432	89.2	1,783	103	57.7	1,521	126	82.8	1,539	203	131.0
Russia....	4,556	320	70.2	1,406	95	67.5	1,615	127	78.6	1,535	98	63.0
Others....	3,056	375	122.3	1,141	176	153.3	909	102	112.2	1,006	96	96.0
Total.....	33,508	3,083	92.0	11,446	1,026	89.6	10,955	935	85.3	11,107	1122	98.0

* Epidemic of poliomyelitis, measles and influenza.

TABLE V.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR AND UNDER ONE MONTH FOR ATTENDANT AT BIRTH, FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915–1916.

Cases studied				Attendant at birth									
				Midwife				Physician				Hospital	
Under one year		Under one month		Under one year		Under one month		Under one year		Under one month		Under one year		Under one month	
No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.
1691	100	763	100	778	46	276	36	653	38	334	44	260	16	153	20

Record shows 1961 deaths under one year, 270 attendant at birth unknown.
Record shows 826 deaths under one month, 63 attendant at birth unknown.

TABLE VI.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR THREE-YEAR PERIOD BY ATTENDANT, NEWARK, N. J., 1914–1916.

Year	Attendant at birth							
	Total		Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
1914	11,107	100	5,471	49	4,352	40	1,284	11
1915	10,955	100	5,414	49	4,243	38	1,295	12
1916	11,446	100	5,582	49	4,488	39	1,374	12
Total....	33,508	100	16,467	49	13,083	39	3,953	12

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TABLE VII.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR BY NATIVITY OF MOTHER FOR ATTENDANT AT BIRTH, FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915–1916.

Mother born in	Attendant at birth							
	Total		Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
United States..	545	100	116	21.3	311	57.1	118	21.6
Italy....	278	100	245	88.1	25	9.0	8	2.9
Austria..	157	100	127	80.9	22	14.0	8	5.1
Russia...	128	100	69	53.9	38	29.7	21	16.4
Others...	139	100	56	40.3	51	36.6	32	23.1
Total....	1247	100	613	49.0	447	36.0	187	15.0

TABLE VIII.—PERCENTAGE DISTRIBUTION OF BIRTHS BY NATIVITY OF MOTHER FOR ATTENDANT FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915–1916.

Mother born in	Births		Attendant at birth					
			Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
United States..	9,075	100	1,984	21.8	5,368	59.2	1,723	19.0
Italy....	4,950	100	4,418	89.2	487	9.9	45	0.9
Austria..	3,304	100	2,505	75.8	603	18.3	196	5.9
Russia...	3,020	100	1,468	48.6	1,161	38.4	391	12.6
Others...	2,047	100	621	33.6	1,112	51.7	314	14.6
Total....	22,396*	100	10,996	49.1	8,731	39.0	2,669	11.9

* Record shows 22,401 births, five births had no attendant at birth.

ophthalmia is most likely to occur, this record bears out the previous statement. The number of ophthalmia cases reported in 1916, showed a reduction of 40 per cent. over those reported in 1914, and during this period not a single case of blindness has occurred.

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TABLE IX.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR FOR ATTENDANT AT BIRTH BY PRIMIPARA AND MULTIPARA AND NATIVITY OF MOTHER, FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915–1916.

Mother born in	Deaths		Attendant at birth					
	All attendants at birth		Midwife		Physician		Hospital	
	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.
United States..	51.4	40.7	14.0	20.0	71.0	68.8	65.9	60.8
Italy....	10.0	27.1	23.6	43.7	3.3	6.8	4.5	4.1
Austria..	16.9	10.9	41.2	16.0	5.9	4.5	4.5	4.1
Russia...	9.3	10.7	15.8	10.3	7.2	9.1	3.4	18.2
Others...	12.4	10.6	5.2	10.0	12.5	10.8	21.6	13.0
Total....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE X.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR ATTENDANT BY PRIMIPARA AND MULTIPARA AND NATIVITY OF MOTHER FOR SIX CONSECUTIVE MONTHS IN 1916, NEWARK, N. J.

Mother born in	Births all attendants		Attendant at birth					
			Midwife		Physician		Hospital	
	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.
United States..	54.6	35.7	18	16	71	58	67	63
Italy....	11.0	26.1	31	43	3	7	1	2
Austria..	14.0	15.5	30	22	6	7	8	4
Russia...	10.2	12.7	15	12	9	13	9	17
Others...	10.2	10.0	5	6	11	15	14	13
Total....	100.0	100.0	100	100	100	100	100	100

Our records show that about ten midwives are still disposed not to call a physician promptly in abnormal cases and that seven do not carry thermometers. This, however, is an improvement over 1914 when the records showed that seventy did not send for physicians and twenty-five did not carry thermometers.

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TABLE XI.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR FOR PRIMIPARA AND MULTIPARA BY NATIVITY OF MOTHER FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915–1916.

Mother born in	Total deaths		Primipara			Multipara		
	Prim.	Mult.	Midwife	Physician	Hospital	Midwife	Physician	Hospita
United States..	33.5	66.5	8.8	59.3	31.9	27.5	56.0	16.3
Italy....	12.9	87.1	75.0	13.9	11.1	90.1	8.2	1.7
Austria..	38.2	61.8	78.3	15.0	6.7	82.5	13.3	4.1
Russia...	25.0	75.0	56.2	34.4	9.3	53.1	28.1	18.8
Others...	31.6	68.4	13.6	43.2	43.2	52.6	33.7	13.7
Total....	28.3	71.7	32.3	43.0	24.8	56.0	33.0	11.0

TABLE XII.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR PRIMIPARA AND MULTIPARA BY NATIVITY OF MOTHER AND ATTENDANT AT BIRTH FOR SIX CONSECUTIVE MONTHS OF 1916, NEWARK, N. J.

Mother born in	Total births		Primipara			Multipara		
	Prim.	Mult.	Midwife	Physician	Hospital	Midwife	Physician	Hospital
United States..	39.5	60.5	10.1	61.3	28.6	24.8	61.0	14.2
Italy....	15.1	84.9	85.5	12.9	1.6	89.7	9.7	0.6
Austria..	27.7	72.3	65.1	21.0	13.9	79.5	18.1	2.4
Russia...	25.6	74.4	38.3	40.6	21.4	52.1	37.5	10.4
Others...	30.3	69.7	16.6	52.9	30.5	33.5	56.3	10.2
Total....	29.8	70.2	29.6	47.4	23.8	54.5	37.5	8.0

In 1917, no midwife to our knowledge carried any drug or surgical instrument, not even a soft rubber catheter. Two midwives, however, used hypodermic injections for anemia in pregnancy and to give pituitrin to hasten labor. In this, I fear, they were but following in the steps of some busy practitioners, without, however, the warrant of law.

In 1917, four licenses were revoked by the State Board of Medical Examiners upon our recommendation; three for malpractice and one for incompetence and neglect, though the midwife had been in practice over forty-two years, delivered over 7000 women and received a gold medal after delivering 5000 cases.

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TABLE XIII.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR ATTENDANT, BY NATIVITY OF MOTHER, NEWARK, N. J., FOR SIX CONSECUTIVE MONTHS IN 1916.

Mother born in	Attendant at birth							
	All attendants		Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
United States..	2357	41	448	16.7	1441	62.4	468	66.0
Italy....	1230	22	1096	40.8	125	5.4	9	1.2
Austria..	857	15	647	24.1	162	7.0	48	6.7
Russia...	684	12	332	12.4	262	11.4	90	12.6
Others..	574	15	163	6.0	317	14.0	94	13.5
Total....	5702	100	2686	100.0	2307	100.0	709	100.0

TABLE XIV.—DEATHS UNDER ONE YEAR FOR NATIVITY OF MOTHER BY ATTENDANT AT BIRTH FOR PRIMIPARA AND MULTIPARA, FOR TWO-YEAR PERIOD, NEWARK, 1915–1916.

Mother born in	Deaths			Attendant at birth								
				Midwife			Physician			Hospital		
	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.
United States.	545	182	363	116	16	100	311	108	203	118	58	60
Italy.....	278	36	242	245	27	218	25	5	20	8	4	4
Austria.....	157	60	97	127	47	80	22	9	13	8	4	4
Russia.....	128	32	96	69	18	51	38	11	27	21	3	18
Others.....	139	44	95	56	6	50	51	19	32	32	19	13
Total.....	1,247	354	893	613	114	499	447	152	295	187	88	99

In the three years there has been considerable improvement in the reporting of births by midwives. I mention this because the prompt and complete reporting of births is essential for accurate vital statistics and effective preventive child hygiene work. In 1916, of 5414 births attended by midwives only twenty-nine were unreported; for the two-year period, of 10,996 births 262 births were reported late, or 2.4 per cent. and forty-two or 0.3 per cent. not

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TABLE XV.—BIRTHS FOR NATIVITY OF MOTHER BY ATTENDANT FOR PRIMIPARA AND MULTIPARA FOR SIX MONTHS OF 1916, NEWARK, N. J.

Mother born in	Births			Attendant at birth								
				Midwife			Physician			Hospital		
	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.
United States.	2357	931	1426	448	94	354	1441	571	870	468	266	202
Italy.....	1320	187	1043	1096	160	936	125	24	101	9	3	6
Austria.....	857	238	619	647	155	492	162	50	112	48	33	15
Russia.....	684	175	509	332	67	265	262	71	191	90	37	53
Others.....	574	174	400	163	29	134	317	92	225	94	53	41
Total.....	5702	1705	3997	2686	505	2181	2307	808	1499	709	392	317

reported, while physicians attended 8731 births and reported late 725 or 8.3 per cent. and failed to report 56 or 0.6 per cent.

When we recall the homes in which the midwife works, the housing, social and economic conditions under which her families live, I see little reason for condemnation or elimination of the midwife, or the establishment of costly hospitals to care for all maternity cases. Our experience rather justifies our faith in their usefulness under proper supervision and coöperation.

MIDWIFERY AND OPHTHALMIA NEONATORUM.

Among the 4000 babies supervised by the Child Hygiene Division of Newark, N. J. during 1915 and 1916 and attended by midwives, our nurses discovered sixty cases of purulent discharge of the eyes, not reported by the midwives attending these cases; of these only seven were found to show gonococcus. We consider this ample proof that midwives use silver nitrate practically in all their cases and have failed to call physicians only in very rare instances.

TABLE XVI.—OPHTHALMIA NEONATORUM, 1915-1916, NEWARK, N. J.

Total births	Ophthalmia cases reported		Attendant at birth								
			Midwife			Physician			Hospital		
			Births attended	Ophthalmia cases		Births attended	Ophthalmia cases		Births attended	Ophthalmia cases	
	Total	Rate	Total	Total	Rate	Total	Total	Rate	Total	Total	Rate
22,401	27	100	10,996	10	0.9	8,731	12	1.3	2,669	5	1.8

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DISCUSSION ON THE PAPERS OF DRS. HARRAR AND LEVY.

DR. E. GUSTAV ZINKE, Cincinnati.—What I have been able to gather from the essays is this, that the results in the practice of obstetrics in the hands of the man-obstetrician are not superior to those obtained by the ordinary midwife. Am I right? One who has devoted himself to the practice of midwifery for a period of forty years, who has taught the subject annually for a period of twenty-eight years, who has kept his eyes open, and who is willing to make a truthful statement, cannot help admitting that what has been said on this floor this afternoon is only too true. If the obstetrician of to-day cannot claim superiority in obstetric practice over the ordinary midwife, there is something seriously wrong. It is impossible to father the claim that the science and practice of obstetrics are not better taught than in the past. Midwifery has never been better understood, nor better taught, than during the last thirty years.

It does not matter whether those who are engaged in the practice of midwifery in private or in hospital practice be midwives or male obstetricians; the determining factor in this instance is, and always will be, how much does the individual, whether man or woman, who engages in the practice of midwifery, know about obstetrics? And if he, or she, knows all about it, much depends upon the care given the patient. Not every one who understands midwifery gives the patient the full benefit of his knowledge. To be a master in obstetrics, is one thing, to practice it well and conscientiously is another. This will explain in a way, why the end-results obtained in the practice of obstetrics are such as are quoted here to-day. And then there are other reasons for the success of the midwife. When the latter are presented in medical meetings, they are invariably resented by a large, yet influential element in the profession. But let the truth be known in spite of this opposition. The midwife waits far more patiently than the busy doctor. She has no authority to make a version, to use the forceps, or to perform any other obstetric operation. She is loath to call in a physician to assist her in a case for fear she may lose in practice and prestige. Therefore, she waits and gives nature a better opportunity to do the work. True, sometimes the midwife waits, I am sorry to say, too long; but I do not hesitate to state that the results of this waiting on her part are more frequently advantageous to the mother, even though the latter may be, temporarily, a little the worse for the wear. On the other hand, the physician, who is privileged to use the forceps, to turn, or to perform without question or censure, any operation he may select, is apt too often to resort to any of these means simply because he is in a hurry to get through with the case.

And what is worse, there are many practitioners who do not know how to perform a version properly, there are many who use the forceps badly and too frequently, and the same may be said of any of the obstetric operations. The worst of all, however, is, that there are too many men in the medical profession who know little or nothing of obstetrics, who depend solely upon nature or accident,

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and when they fail to deliver the patient, after attempts to perform a version or to use the forceps, call to their assistance an expert who is expected to assume the responsibility in the case and to endorse the conduct of the attendant.

DR. JOHN NORVAL BELL, Detroit.—I have often wondered how it is that midwives get better end results than the doctors! I think there are two distinct classes of men who do obstetrics, the male midwife and the obstetrician. The obstetrician, I believe, will get better end results than the midwife, but my idea is that the reason for the better end results which the midwife shows is this, that the male midwife is practising all kinds of medicine. He goes from a scarlet-fever patient and delivers a woman; he goes from opening an abscess and delivers a woman. He is engaged in all sorts of work and he does obstetrics. The woman midwife does nothing but obstetrics; her hands are cleaner; she does not infect the patient. There, in my mind, is the solution of that disparity.

DR. WILLIAM H. HUMISTON, Cleveland, Ohio.—This is a very interesting subject and I think it is one that should be thoroughly understood and talked over, in the hope that we will have better obstetric work done by the male obstetrician. Obstetrics, as Dr. Zinke stated, is very much better taught to-day than formerly. In fact, it is perfectly taught to-day, where it was not twenty or twenty-five years ago, and the reason why the female obstetrician excels over the male is because she waits longer. She does not become impatient; she is not in a hurry. She has not some other case to go to and hurry matters up, apply forceps before the first stage is reached. The practitioner is in a hurry to make the delivery. I have repaired one woman who had extensive laceration of the cervix at the vaginal junction, tearing the perineum down to the sphincter ani. She was in competent hands. She went into a hospital to be confined a week before her time was up. The doctor had been there a few days before and said she had gone over her time and he would induce labor, as it could be done very readily. He packed the cervix and vagina with gauze and allowed the packing to remain in forty-eight hours, then removed it. Labor pains had not started up; he repacked. At the end of thirty-six hours she had a violent chill and her temperature reached 104° F. He did a forcible dilatation of the cervix, delivered a dead baby. The baby weighed 8 pounds. The patient was dissatisfied, and through her friends learned from the nurse that the doctor was expecting his daughter to return from Europe and wanted to be in New York at the time of her arrival on a certain date and therefore he induced that labor. That is poor obstetrics. He knew better, for we have to be patient in these cases; we have to know enough about obstetrics to know the relative size of the child's head that has to go through the pelvis. We have to determine, as near as we can approximately, when that child can be delivered, and if there is no disproportion between the child's head and the pelvis, we can wait indefinitely, and nature will deliver the child better than we can do by any hurry up process.

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DR. GORDON K. DICKINSON, Jersey City, N. J.—The midwife is successful because the law is honored. The young doctor is unsuccessful because he knows there is no law except his own; he is in a hurry; he wants to go home to breakfast, as the chances are he has been out all night. He has other cases to attend to, and until you put the law on the doctor the thing will occur. You can discuss this subject for the next ten years and it will be the same thing.

New Jersey is a rather advanced State in this regard. I am glad you are here to hear about it. We have laws here as to the standardization of the physician. We have a committee connected with the State Medical Society, and have had for three years, looking into the standardization of hospitals, and no one knows better than you or I do that there is no standardization of hospitals at present. The standardization is reached by men on the Board of Managers or a selfish superintendent. The doctor has no say except in a few cases. This committee of standardization at the last meeting of the State Society was called upon to formulate a plan by means of which we can standardize obstetrics in the hospital, because around this part of the country obstetric cases tend to go into the institutions, the poor, the wealthy, and the middle classes. I feel that if we succeed in this, we should standardize a proper midwifery department with an institution, and not a man who is merely willing to do it, but an obstetrician, a man who reads obstetrics and studies it, and lives in it, the same as you would a bacteriologist or an *x*-ray man, make him be responsible for results and report his failures as well as successes. It may be slow; it may take time, but the movement was started, and until you put the law on the doctor as well as on the midwife, there will be trouble.

DR. J. HENRY CARSTENS, Detroit.—Before the discussion is closed, I would like to ask, what is the trouble with the hospitals? The way I interpret what has been said is that the hospitals are as bad off as anything else. Certainly, in a hospital the doctor is not in a hurry. Most of the women that are in a hospital are attended by the house physician and the regular obstetrician, who may have charge of the department, is not always around when these women are delivered. They are delivered under the care of the house physician and that house physician is not in a hurry. Why is it the statistics of the hospital are poorer than those of cases delivered by midwives?

DR. JAMES F. PERCY, Galesburg, Illinois.—We have had two papers on a subject that is usually very uninteresting and yet these papers have been very illuminating and instructive. In Illinois we have recently started a movement that has for its purpose the improvement of the midwifery question by giving the trained nurses the right to practise obstetrics after being found qualified through an examination by the State Board of Health.

Dr. Dickinson has alluded to a point that must have occurred to all of us when he suggests the supervision of the physician in some such way as the midwife is supervised. I think Dr. Levy is to be congratulated that he has obtained the results that he has reported to

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us to-day by looking after the work of the midwives. I wish that it were possible for him to put into his statistics the relative quality of the work done by the physicians who have graduated in the last fifteen years as compared with the work along the same lines by the older men engaged in midwifery practice. My own belief is that there is as much puerperal fever as there ever was and it would be interesting to know if this was true in the work of the physicians who have been educated in the recognized modern methods. This question gains additional importance by the remarks of Dr. Harrar in reference to puerperal fever. I hope that the time is coming when every state will have a supervising committee either from the State Board of Health or from the State Medical Society whose duty it shall be to look after the interests of the public not only from the standpoint of good obstetrics but from that also of abdominal surgery.

DR. HARRAR (closing the discussion on his paper).—I have not very much to add to what I have already said. I tried to keep away from detail in my paper and present our general results. You can prove almost anything by statistics if you do not carefully analyze them. For instance our figures might be said to prove that rubber gloves were no good in obstetrics, because on the outdoor service, where we use no rubber gloves as a matter of economy, our mortality and morbidity are better than on the indoor service where we do use rubber gloves. We know this is not the case.

I did not take up the midwife question as I have not accurate figures on which to base any assertion. We get fewer cases that have been badly mismanaged by doctors in the last few years than we did ten years ago. We think this may be because many of the local physicians have had the advantage of the teaching in their attendance at the hospital as students, and have profited by their experience.

Dr. Carstens raises the question about the mortality being higher in hospitals than in private work generally. The reason for this is that the hospital figures unless carefully dissected are contaminated by referred bad cases. The hospital gets the blame for the deaths while the referring doctor or midwife goes free. The deaths from septic abortion and infection are charged up to the hospital and the midwife does not get into trouble.

With regard to a method referred to in the discussion of letting puerperal women with foul lochia "stink themselves out," that might be said to be the principle of our present treatment at the Lying-In Hospital. If there is foul lochia we raise the head of the bed and let them alone. We no longer douche these women, although the odor may be most disagreeable to both the patient and her attendants. We do not do anything locally. Since we have pursued this course of treatment our mortality and morbidity results have regularly improved.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—I should like to add a word or two to what I have already said. From experience in the outdoor obstetric clinic, where not only the surroundings of the

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patient were filthy in the extreme in many instances, but the patient's body and bed in nearly every case were anything but aseptic, I may say that both the fetal and maternal mortality and morbidity were not bad, in spite of the fact that students of the fourth year were alone in attendance upon these cases. I cannot claim to have had the same success with some of the patients I delivered in homes with the very best environments and those delivered in well-equipped maternity hospitals. This may best be explained, or illustrated, by referring to the often-observed fact that people who live under unsanitary conditions, like those who from the time of birth are accustomed to poor food and impure air and water, acquire a certain immunity from diseases to which others, who have always enjoyed the best of sanitary surroundings, wholesome food, pure drinking water, and fresh air, would readily fall victims.

DR. LEVY (closing the discussion).—In the first place I wish to take exception to the remarks of the gentleman who tried to criticise the statistical evidence of the low maternal and infant mortality in midwifery practice that I have submitted, stating that figures can be easily juggled to prove anything. Progress in the solution of many medical questions can only be made by the use of statistics and it is unwise and unfair, especially for one who reads a paper based upon statistics, to repeat this old cynicism.

It is true that statistics must be used very carefully and that we should try to include in our report all the elements or factors that may have any relation to the subject under consideration; that I have tried to do this can be seen from the data presented in reference to the distribution of primipara and certain nativities in the practice of the midwife. While the figures show a lower mortality among midwife cases, I did not claim that this was due to any superior skill or ability, but clearly indicated that it could be partly explained by several facts that were brought out by the statistical analysis. I did maintain that the facts as far as can be determined from statistical evidence are not of such a character as to warrant obstetricians making the attacks upon midwives I referred to in the beginning of my paper.

The higher mortality in hospital cases I explained as partly due to the higher proportion of primipara delivered there, but I also pointed out that the higher mortality among physicians and hospitals could not be explained away by the old defense that this was due to the fact that midwives send their badly damaged or moribund cases to the hospital as, in a series of puerperal deaths, carefully investigated, we found that only 25 per cent. of the deaths could be charged to the midwife though they delivered 50 per cent. of the births, even if we held them responsible for every case in which they had been in attendance. I think we will have to admit that women delivered in hospitals are not always attended by superior obstetricians, as a matter of fact the work is frequently done by interns or general practitioners with no special qualification. Some of the poor results may also be due to a lesser sense of responsibility and a greater tendency to experimentation, which I am sure does not always work out to the advantage of the patient.

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The purpose of my paper was not to exalt the midwife, but rather to compel those obstetricians who have been hurling the brand of infamy at the midwife to produce the facts upon which their contentions are based so that if they are justified we may all come to the same opinion. It is very important that this question should be settled, because of the statements made by prominent obstetricians, of the desirability of many maternity hospitals to take care of all the cases that now are delivered by midwives, many physicians and laymen are calling upon the community to build hospitals at considerable expense. Those of us who are familiar with the family life of our people look with great trepidation upon any system that removes the wife and mother from the family even for a period of two weeks, and we really feel that there is no better period in the life of the family to develop the solidarity of the family than during this period of childbirth and, therefore, there is a grave responsibility upon all those who urge institutions as a solution of the maternity question.

DR. HUMISTON.—In those cases of puerperal sepsis that happen in the practice of a midwife, and she calls a physician, and the patient lives anywhere from three to twenty-one days and finally dies, does the midwife sign the death certificates or the doctor?

DR. LEVY.—The midwife signs no death certificates. Every death certificate is signed by a doctor. If a woman dies who has been attended by a midwife at any time we charge the death against the midwife and not the doctor.

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PREËCLAMPTIC CESAREAN SECTION.

BY

JOHN WILSON POUCHER, M. D.,

Poughkeepsie, N. Y.

In looking back over an experience of over thirty years of general and consulting practice, I can recall no class of cases where the results have been, as a rule, so unsatisfactory as those of puerperal eclampsia. Until quite recently, it was generally considered that we had a kidney condition to contend with, and the terms "pregnancy nephritis," "albuminuria of pregnancy," or the "kidney of pregnancy," were in general use. We were led to believe that the phenomena, such as eclampsia, coma, and dropsy were similar to those caused by uremia, which was produced in some manner by the pregnant state.

At the present time, we know that we have a far different condition to deal with:—a toxemia, produced by the presence in the blood in a certain percentage of pregnant women, of some toxic substance which affects seriously the function of all the organs. Although our better knowledge of the pathology of the condition causing eclampsia, has brought about some improvement in the results of our treatment, there is still much to be expected.

Late reports give the maternal mortality of eclampsia as 15 per cent. and the infantile mortality from 40–60 per cent. This is an improvement, but still too high a mortality. As statistics usually come from the larger maternity hospitals, where the best facilities are to be found for care and treatment, they are undoubtedly better than would be found if gathered from all sources. What can be done to lower this high mortality rate, both maternal and infantile?

In the first place, educate these expectant mothers, impress upon them the importance of keeping in touch with their physician, establish prenatal clinics, where the poorer patients can be watched and advised. The District Nurse system is already doing much of this work even in the rural districts. There are comparatively few of these toxemic patients, if the trouble is detected early, who cannot be carried safely through or, at least into the later months of pregnancy when the child is viable. We should strive to give

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these mothers with their unborn babes at least as good a chance as we give patients afflicted with tuberculosis or cancer, for they are practically all curable.

When a patient at, or near term, in spite of all means of elimination, shows by nervousness, sleeplessness, severe headaches, high blood pressure, edema, and excessive albuminuria that convulsions are imminent, why wait until the patient has become eclamptic? In many cases the patient is unconscious, and the child as toxic as the mother; if it survives delivery, it succumbs in a few hours, or a day or two at best. It is right here that we are confronted by the question, what shall we do? What is the best procedure to save both mother and child? How long is it safe for us to wait for, and to depend upon our efforts to combat the toxemia by means of laxatives, sedatives, hot packs, bleeding, etc.? The safety of both mother and child now depends upon the emptying of the uterus as rapidly as possible. I do not believe that any rule of procedure can be laid down that will apply to all classes of cases.

In women who have borne one or more children, where labor has safely begun, and the cervix thinned out, delivery may be easily and rapidly accomplished by means of rubber bags and manual dilatation, under ether. This is the class of cases which I believe may be greatly facilitated by vaginal hysterotomy. But a large majority, 75 per cent., or more, of eclamptic women are primigravidæ, many of them with rigid elongated cervices. In these cases delivery by rapid dilatation, either with rubber bags, by manual manipulation, or even by hysterotomy, is a difficult task of sometimes many hours' duration and may, in spite of our utmost care, be fraught with danger to the child and, through toxemia and infection, to the mother. In these cases Cesarean section offers by far the best results.

I know that almost every writer on this subject has criticized this procedure, deprecating the frequency of Cesarean section in eclampsia, advising that in most cases it is better to employ some of the other methods, leaving Cesarean section as a later resort. I have had some experience in these later-resort cases, and my results have not been good.

In studying the literature, I have not found any reports that have been satisfactory. It is not reasonable to expect favorable results because we must always remember that the longer the convulsions continue, the greater the mortality both to mother and child. The first convulsion is the real danger signal. The toxemia does not become a real menace to the life of either until the stage

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of convulsions has begun. The longer the convulsions continue, the more rapidly toxemic both mother and child become.

During the past three years I have adopted the plan of operating upon this class of patients, when I have become convinced that convulsions were imminent; in some cases at the onset of labor, and in others before labor had begun. I do not expect that my experience has been extensive enough during this time to be reckoned with that of any of the large maternity institutions. Together with my associate, Dr. C. J. McCambridge, I have treated twelve cases of pregnancy toxemia since 1914. Of these, seven were treated by preëclamptic Cesarean section. Of these seven cases, the seven mothers and eight children survived, one mother having twins. The other five cases were patients to whom I was called late, after they had been some time in convulsions. Of these seven mothers, six were primigravidæ, and one multipara, third child. Two were operated upon after labor had begun, five before the beginning of labor. Three had general edema. Two were suffering from mental dullness, one of them being semi-comatose. One had been suffering for sometime previous to her pregnancy from chronic nephritis. One patient had a serious mitral murmur. One was complicated by a goiter and active hyperthyroidism. Two had postpartum convulsions, one having two convulsions, and the other one convulsion, which were easily controlled. Of the other five cases, two were treated by Cesarean section, of which one mother, and no children, survived, two by vaginal hysterotomy, in which both mothers and one child survived. The fifth, brought to us from a distance, was about the sixth month of pregnancy, and had suffered many convulsions. All operative procedure was positively refused until it was too late to do anything to save even the mother, who died of extreme exhaustion and toxemia. Of the two late Cesarean sections, one patient was brought to the hospital in a comatose condition after having been in convulsions for several hours. As I did not believe she could possibly survive the process of a slow dilatation and delivery, she was operated upon at once and delivered of a living child. Her convalescence was slow, the coma lasting for about three days. She suffered several severe postpartum convulsions, which were controlled by morphine, chloral, veratrum viride, and hot wet packs.

In my early training I was taught to depend upon veratrum viride in all cases of puerperal eclampsia, and I still have confidence in it, for controlling convulsions, but that confidence is greater in postpartum convulsions when the uterus is empty and the cause

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of the toxemia has been removed, and that we have a chance of eliminating the toxins faster than they are being manufactured.

The other late Cesarean section was performed on a very fat primipara, who had been twenty hours in convulsions and labor. She was extremely toxic, very edematous, and semicomatose. She had been in labor for nearly twenty-four hours, but had made no appreciable progress. The cervix was thick and infiltrated, as was also the vulva and vaginal outlet. She was delivered by Cesarean section of a large living child which, however, was too toxic to survive. I found the uterine wall thick and flabby from infiltration, and although she was given pituitrin freely, as soon as the uterus had been emptied, there was scarcely any contraction of the uterine muscle. She suffered a severe postpartum hemorrhage, the first I have seen in fifty-one Cesarean operations. The patient developed an acute dilatation of the stomach, and altogether experienced a very stormy convalescence; but, finally, made a good recovery. I cite these two cases as fair examples of late Cesarean section.

I am satisfied that if this patient had been operated upon twenty-four or even forty-eight hours earlier, before the onset of convulsions, she would have been spared the desperate fight she had for her life, and would also have been spared her child.

It has frequently been said as an argument against Cesarean section, that the toxemia cannot be so easily treated after delivery, owing to the abdominal wound. I have never experienced any difficulty from this source. I have never hesitated to put my patient in the hot wet pack, and I have never had any unpleasant results. The wound is small and can be easily protected. In cases of early operation, there is usually very little trouble afterward. The cause is removed, the resistance is good, and convulsions rarely occur. The toxemic symptoms rapidly disappear, and convalescence is rapid and normal.

That there is a certain amount of shock to the patient from the operation cannot be denied, but it is negligible as compared with the amount of the shock produced by repeated convulsions, or even that produced by the protracted administration of anesthetics, which is necessary to prevent the constant recurrence of convulsions.

Chloroform, which up to a few years ago was universally used, has been proven to add to the effects of the existing toxemia; and ether, when its administration is prolonged, if it does not add to the toxic condition, I believe tends to weaken the resistance in both patients, so that when the labor is finally terminated mother and child are so exhausted that they are too feeble and too toxic to re-

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spond. We are frequently told that the maternal mortality is lowest where there is the least operative interference. Twenty-five years ago we were told the same thing about appendicitis.

I have no patience with these men; they tell us that we should allow nature to take its course, and interfere only when everything is going bad with the patient; then they give us, as a result of this method, a maternal mortality rate four or five times as high, and an infant mortality rate eight to ten times as high, as can be obtained by early Cesarean section. Personally, I believe that we should never allow a severe preëclamptic toxemia case to suffer hard or prolonged labor pains, for there is no doubt that they rapidly increase the toxemic condition, and produce toxic congestion and edema in the liver, spleen, kidneys, and brain, with resultant convulsions and coma. On the other hand if preëclamptic Cesarean section be done with ether or gas-ether anesthesia, of fifteen to thirty minutes, there is practically just as good a chance for the mother as there would have been had no toxemia existed, for the toxin is rapidly eliminated and recovery is normal.

It is also constantly pointed out that the scar of a Cesarean section is likely to weaken the uterine wall and subject the patient to the danger of a possible rupture of the uterus in any subsequent labor. This cannot be denied; but which is the greater of the two evils? One is a very present and very grave danger, the other is a remote and improbable one. I have seen but two ruptured uteri, and in neither of them was a previous Cesarean section the cause. I am inclined to believe that the danger from rupture of a section scar has been very much overrated—at least so much so, that it should not be considered against the much graver danger of puerperal eclampsia.

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THE CONSERVATIVE TREATMENT OF ECLAMPSIA.

BY

ROSS McPHERSON, M. D.,

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THE radical operative methods almost universally in vogue for the treatment of that form of obstetrical toxemia accompanied by convulsions ordinarily spoken of as eclampsia, have been accepted and practiced so consistently by the majority of obstetricians throughout the world, that in order to bring forward any sort of treatment savoring of conservatism, the suggestor is of necessity placed in a position to have showered down upon his head a storm of adverse criticism and disbelief, unless he can offer the strongest proof for his assertions, backed by evidence which is indisputable.

Sporadic attempts have been made from time to time to interest physicians in what may be termed the medical treatment of the convulsive toxemias, and among them those made by our Secretary, Dr. Zinke, by one of our Fellows, Dr. Leighton, the reports of Stroganoff, and the Rotunda Hospital, should be well known to you all and certainly ought to be illuminating. So far as the writer can discover, however, none of the preceding contributions have made much impression on the greater number of men dealing with the complication in hand, and the more spectacular methods of delivery, such as abdominal Cesarean section, the so-called vaginal Cesarean section, rapid and brutal accouchement forcé, etc., still hold the position of choice when a patient is seen suffering from a convulsive toxemia.

A thoughtful survey of the mortality statistics of patients suffering from eclampsia, taken from the reports of numerous writers both here and abroad, will show that treated by radical methods, the maternal mortality approaches an average of from 25 per cent. to 30 per cent., these figures being easily available, and that the fetal mortality averages from 40 per cent. to 50 per cent., surely a frightful complication, the etiology of which no one knows, a fact most constantly impressed upon me by reading the numerous dissertations of various authors on their experimental work. A striking contrast to these figures is seen in the report of the last

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15,774 cases delivered at Sloane Maternity Hospital, where under reasonably conservative treatment, the maternal mortality was reduced to 14.5 per cent. with a corresponding reduction in the still-birth rate. In the previous 2000 deliveries at the same institution, the maternal mortality was 28.3 per cent., with a fetal mortality of 60.15 per cent.(1).

Far be it from the writer's intention to convey the impression that he minimizes the value of the efforts of the experimental investigators, realizing to the uttermost that only through such investigation will the problem finally be solved, as solved it will be, but at present we are too apt to present dicta and methods of operation for a condition the actual etiology of which we know little or nothing.

Struck with the results of radical treatment (the bad results) and, at the same time, impressed with the good results of the writers already quoted, and feeling that in spite of their heresy they could not *all* be *entirely* wrong, the writer began about two years ago to employ the treatment, later to be described, and published the results last January in the Bulletin of the Lying-In Hospital, as a preliminary report(2). Since that time the number of cases has increased and the figures herewith presented represent, without any attempt at discrimination, the actual results in cases of true convulsive toxemia.

As this article is supposed to deal with treatment of an acknowledged fact, and not with theory, discussions of etiology, etc., will be omitted, and it will be assumed that it is understood that all of the reported cases were pregnant or recently so; that they all had had one or more convulsions and represented true obstetrical toxemias.

Immediately on entrance to the hospital, the patient's blood pressure is taken, a catheterized specimen of urine secured, and she is put into an isolation room which is darkened and as much quiet as possible obtained. She is then given by hypodermatic injection, ½ grain morphine sulphate, her stomach is washed out, 2 ounces of castor oil is poured down the tube at the end of the lavage, and she is given a colonic irrigation of 5 gallons of 5 per cent. glucose solution.

If the blood pressure is over 175 systolic, phlebotomy is done, and a sufficient quantity of blood is extracted to bring the pressure down to 150; normal saline is not injected. In the opinion of the writer, it is unwise to bleed the patient if the pressure is lower than 175 systolic, as if, for any reason, a good deal of blood is lost during

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the delivery, the pressure will be reduced so low that the patient may die from shock. This same objection applies to the antepartum administration of large doses of veratrum viride.

The patient is now kept quiet and ¼ grain morphine administered every hour until the respirations drop to eight per minute. At this time convulsions have usually ceased, the patient will have fallen into labor, and, as has happened in practically all of our cases, will be delivered normally or by an easy low forceps in a short time. Occasionally, the use of a little ether is necessary to control the convulsions while waiting for the effect of the morphine. The convalescence is treated in the usual manner, as indicated by the symptoms, and has been in our patients significantly uncomplicated.

The series now includes fifty-five true convulsive toxemias. Of these fifty-five, seven mothers died, showing a gross maternal mortality of 12.7 per cent. Two of these mothers, however, died before treatment of any sort could be administered, one arriving postpartum at the hospital and dying before anything could be done for her, the other dying of cerebral embolus while apparently in good condition and after having had but one convulsion. In these two cases no form of treatment whatever would have been successful, so that in a comparative estimate of methods of treatment, such as this paper purports to be, it is fair to exclude these two patients. This, then, leaves a corrected mortality of five mothers out of fifty-five patients treated in the manner already outlined, or, in other words, a mortality of approximately 9 per cent.

In our first cases referred to above, the maternal mortality was 8.5 per cent., so that the ratio holds about the same. The number of children still-born in the series was 19 per cent. or 34 per cent., which is a considerable reduction over the best figures quoted. Practically all of these were very premature or macerated and, as in the writer's first report, in no case which was at term and in which a fetal heart was heard on entrance, did morphine, although sometimes used in enormous quantities, seem to make any difference in regard to the viability of the child.

This is interesting because at the time when scopolamin-morphine amnesia was first in the lime light before the medical public, we heard so much talk about the dangers of scopolamin-morphine amnesia, due to the fact that morphine was used. Inasmuch as the scopolamin-morphine amnesia patients never got more than ⅙ of a grain, and that early in labor, whereas the toxemia patients frequently get 3 or 4 grains during the course of their treatment, it seems unnecessary to comment further on this point.

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To conclude, the writer desires to say that he does not wish the Association to regard this report as anything more than the results of the clinical observation of a special method in treating a fairly large number of cases of a complication which taxes all the resources of the most skilled obstetrician. He has tried in the past all of the other methods recommended, and due largely to his training and to surrounding opinion, has until recently felt that radical operation was the method par excellence for treating eclampsia and has so expressed himself in print many times. It is, however, a narrow-minded man who cannot admit being wrong and in taking up the present method truly "I came to scoff and remained to pray," so that after watching with great care the effects of this treatment in the above cases, I feel that a real contribution to obstetrical progress has been made, and that if we can persuade the average obstetrician to turn, for once, from his surgical tendencies and return to some of the tenets of his medical forbears, the future of the complication in hand will be vastly better assured. Operations such as abdominal Cesarean section have, I believe, absolutely no place in the treatment of convulsive toxemia of pregnancy, except in the cases where the eclampsia is accompanied by a deformed pelvis or some severe disproportion between the mother and child. The maternal mortality of eclampsia treated by abdominal Cesarean section, where the operation was done purely for the toxemic condition, is about 25 per cent. (3), which is, as will be seen, nearly three times as great as the mortality in this series reported. The stillbirth mortality in a condition where the reason for the death of the child is largely prematurity, with the accompanying fetal toxemia, will not be much changed by an abdominal section.

From a confirmed radical, the writer has changed to what some may call overconservative, but he is convinced that if any of those present will give careful and thoughtful treatment along the lines suggested to their patients suffering from the convulsive toxemia of pregnancy, that both they as well as the patients will ultimately be much gratified with the end results.

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THE TOXEMIAS OF PREGNANCY AND THEIR TREATMENT.

BY

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THE treatment of toxemia of pregnancy and the puerperal state has to do with the management of a symptom-complex, about the origin and cause of which very little is as yet definitely known. The explosion termed eclampsia is but one phase or expression of this toxemia. The time to treat eclampsia is before it occurs. All admit that only in connection with pregnancy do we ever observe a train of symptoms and pathological changes which are similar to it. Clinically, the toxemic patients group themselves rather definitely under three classifications:

First.—The nausea and vomiting of early pregnancy, varying in degree of intensity from the mild forms up to that which is known as pernicious vomiting of pregnancy.

Second.—The condition known as eclampsia with or without convulsions.

Third.—The patients who suffer from chronic nephritis become pregnant, and, because of the added demands of pregnancy, light up an exacerbation of their nephritis and develop uremic convulsions and coma; or, they may also have, in combination with their nephritis, toxemia of pregnancy.

A few women apparently enjoy better health and a sense of well-being when pregnant than at any other time. They never experience nausea or vomiting.

The majority of women who become pregnant begin to have nausea and vomiting soon after conception occurs. This may be only transitory nausea in the morning or at some other hour in the day, or it may be so slight that it is noticed only several times a week. Others suffer from an attack of nausea and vomiting early in the morning, some late in the day, but near the same hour daily, and are free from it the remainder of the twenty-four hours, while others are more or less wretched throughout the entire day because of nausea and vomiting or simply nausea. Usually, by the end of the fourth month, this has largely disappeared, or

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the patient has become adjusted to it, so that little discomfort is experienced thereafter. Some women believe that they are able to distinguish a change in the character of the nausea and vomiting from month to month after what would have been a menstrual period.

It is our belief that all of these women suffer from a mild form of intoxication which differs only in degree of intensity and, possibly, the ability of a given individual to withstand it, from that which produces the so-called pernicious vomiting of pregnancy. This severe form merges gradually from that of a milder degree. It is rarely seen before the second month of gestation and it has usually terminated by the end of the fifth month, either by cessation under treatment, by the termination of the pregnancy by operation, or by the death of the patient with or without curettage. If by treatment, or by the elapsed time, the nausea and vomiting are brought under control, these patients gain and go on to full term without further danger or discomfort from this source. Very rarely we see this condition continuing until labor begins spontaneously, at or near full term. Where this occurs, we have always noted other decided accompanying changes: marked enlargement and tenderness of the liver, bronzing of the entire skin, moderate jaundice in the whites of the eyes, and concentrated bile-colored urine, without evidences of marked renal changes. In one patient the skin was of a dirty green color. In others, the picture of renal disturbance is the predominant one. A fair quantity of urine is excreted which contains a large amount of albumin, hyaline and granular casts, excess of indican, with low total urea output, and with diacetic and oxybutyric acid and acetone. A colitis in excess of what we expect to find, due to repeated colonic irrigation, is present. Convulsions do not occur.

The clinical picture of pernicious vomiting of early pregnancy is similar in all cases. The patient is three or four months pregnant and has the appearance of being very ill. She gives the history of intense nausea and vomiting, which condition has lasted for several weeks with decreased ability to retain food or drink. There has been a noticeable loss of weight and strength. The tongue is dry and thickly coated. Thirst is a prominent and distressing symptom, with preference for acid drinks. Everything is vomited as soon as it is taken into the stomach. In the absence of food and drink, a green, very acid, fluid, full of ropy mucus, and in severe cases containing coffee-ground material, is thrown up. The pulse is of small volume and of low pressure. Urine analysis shows only

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minor renal disturbance, except evidence of well-marked acidosis, due to the withdrawal of fluids and starvation.

Treatment.—In the milder forms the treatment is palliative. Rest and quiet and the recumbent posture are advised during the period of nausea. Food in small quantities and at short intervals is taken during the time when nausea is absent. There should be an avoidance of acids and food that are known to disagree with the patient. Constipation is overcome by mild laxatives and alkaline digestive tonics. The rhubarb and soda mixture, with tincture of nux vomica, is a fair example. Plenty of fluid should be taken, preferably milk. Warm baths are valuable as sedatives and to keep the skin in condition to do its share in throwing off waste products.

In the severer forms, the patient should be in a hospital and constantly in bed; stomach lavage with bicarbonate of soda solution as soon as the patient is admitted and a colonic irrigation with bicarbonate of soda solution. Thereafter nothing is taken by mouth. The distressing thirst is overcome by rinsing the mouth with soda bicarbonate water, and by colonic irrigation of the same. Nutrition is entirely by rectum at first. An irrigation with soda solution is given one-half hour before each nutrient enema. This enema should be of small volume; one egg and milk enough to make 4 ounces, all completely peptonized. Three, and in some cases, four of these enemas will be tolerated in twenty-four hours. This can be continued for weeks as the only nutrition sustaining life. By this plan more available nutrition than the patient has had for a long time, is taken. In a few cases the rectum becomes irritated and intolerant. This can be overcome by the addition of 10 drops of camphorated tincture of opium to each enema for a few times. Small repeated doses of codeine or morphine help the patient to rest. As the vomiting diminishes or ceases, ½-ounce doses of peptonized milk are given every four hours by mouth. This is a quantity too small to be expelled. If tolerated, it can gradually be increased, taking the place of one and soon of another of the nutrient enemas. Repeated stomach lavage is not helpful. Occasionally to allay the thirst, a large drink of bicarbonate of soda water is allowed, with the full knowledge that it will soon be vomited. It is a form of stomach lavage less distressing than that given by a tube.

We are well aware that this is empirical treatment which does not, with our knowledge, strike directly at the cause of the trouble, but by its use a considerable number of patients will recover and continue well throughout the remainder of pregnancy. There are

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other patients who show no improvement under this plan. They appear very ill; the vomiting is not checked. In such cases, after twenty-four hours of treatment and observation, without improvement we empty the uterus quickly with as little shock and loss of blood as possible. This makes no decided impression on the condition of these patients. They had every appearance of not being able to live much longer, and whether pregnancy is terminated or not, they continue on their course and soon die. The patients who recover, after pregnancy is interrupted, do so very gradually. In eclamptic patients, in whom pregnancy is terminated, a rapid course is followed. They either die quickly or soon recover. Those who recover are, as a rule, well on their way within forty-eight hours.

These severe forms of vomiting of pregnancy have come under our care late, after they have been very ill for several weeks without medical care or under the care of a general practitioner in their homes where they were under very little control. They should have hospital care earlier, and, if need be, pregnancy should be interrupted earlier. The life of the fetus parasite should in no instance be allowed to weigh against that of a mature maternal life. The condition may not recur in the event of another pregnancy. In other cases it occurs in each pregnancy, but with different intensity.

One private patient during the early part of her first pregnancy suffered from this intoxication. After being in bed and under treatment for six weeks, in the country, she gradually recovered her good health. She came to New York and was delivered by us. Her labor and puerperium were normal, and her subsequent health for four years was good until she became pregnant a second time. Soon obstinate nausea and vomiting began with increasing intensity. She was under our care from the first, much of the time in the hospital. Pregnancy was interrupted a week before her death. Because she had recovered during her first pregnancy, and was anxious to have another child, consent for an earlier abortion could not be obtained. The plan of treatment outlined above was carefully followed. Thyroid extract was given, also large quantities of human blood serum taken from pregnant and puerperal women were used. Oxygen inhalation was employed. Special nurses were in constant attendance. In so far as we could see, the treatment in no way modified the course of the disease. For twenty-four hours prior to death, there was almost complete suppression of urine and absolute blindness from retinal hemorrhages. There was no jaundice or edema. Disturbance of vision is not often seen in these cases.

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A number of years ago, a ward patient's pregnancy had been interrupted because of nausea and vomiting. To all appearances, her life was in a very unstable balance. During two or three days thereafter, Dr. J. E. Welch, at that time pathologist at the Lying-In Hospital, injected under her skin the serum from 8 liters of blood donated by male and female friends and members of her family. When this treatment began, the patient's condition ceased to grow worse, her improvement, however, was very gradual, although she ultimately recovered. Dr. Welch did not regard this treatment as specific, but rather that the serum furnished easily available nutrition until other foods could be appropriated.

It is proper to note that a few years ago, it was quite the fashion to give thyroid extract for nausea and vomiting of pregnancy. For a time brilliant results were reported. In many cases this agent produced no appreciable result. Of late very little is heard of its use. Rather recently Dr. J. C. Hirst(1) has employed soluble corpus luteum powder in twenty-five consecutive cases of nausea and vomiting of early pregnancy with success in twenty-one of the cases. This plan has all the appearance of being very near the mark of rational direct treatment. It remains for its further use and time to demonstrate whether this is true or not.

Dr. A. Y. P. Garnette(2) reports two typical cases of pernicious vomiting of pregnancy which he treated by transfusion of carefully tested human blood, taken from postpartum women. In the first case, he used only one transfusion of 250 c.c. The second case was transfused twice with an interval of ten days. She was given 250 c.c. the first time, 200 c.c. the second. He reports results as decided and brilliant in both cases as those seen after transfusion for shock and acute anemia after hemorrhage. If these results can be maintained in other cases, he has offered us a very valuable contribution for the treatment of this type of patient. The suggestion arises that this may be a successful way to treat eclamptic patients.

It is logical to use blood from a recently pregnant woman. Whether this is essential, or whether blood from a male or from a nonpregnant donor can be used, remains to be determined.

ECLAMPTIC AND UREMIC TYPES.

It is difficult to distinguish between these two classes of cases. In the uremic patient a history of nephritis may be obtainable. In some cases, the ophthalmoscope will show scars of old retinal hemorrhages or other evidences of retinitis. The subsequent course in a given patient may indicate to which class she belongs. The

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treatment of these cases is the same except that prompt delivery of the uremic patient is more urgent in order to safeguard her eyesight. We rarely see permanent injury of the eyes in true eclampsia. Hazy vision, spots before the eyes, even total loss of vision occurs. Repeated ophthalmoscopic examinations in a large number of eclamptic and preëclamptic patients have never revealed anything but congestion and edema as the cause. Prompt and complete recovery of vision has invariably followed the delivery of the patients who have lived. One patient, six and a half months' pregnant, had one convulsion, regained consciousness, and was totally blind. She was delivered an hour later by vaginal hysterotomy, and four hours later had regained clear vision.

The manifestations of toxemia in late pregnancy vary within very wide limits as to the degree of intensity, mode of expression and manner of attack. As a rule, the onset is gradual. That is, if these patients are under careful observation, indications of toxemia will usually appear. This is not always true. There have been a few cases where examination and urinalysis has been made shortly before a convulsion. The urine showed no abnormality until after the convulsion. Then it showed the characteristic changes. In some cases, the onset is very sudden. One young primipara in the tenements was in her usual good health as far as could be learned. She was near full term. At 7.00 A. M. she was out marketing. At 9.00 A. M. of the same day, she was dead from eclampsia. Similar cases are not uncommon.

Convulsions in the case of a pregnant woman are usually considered an essential in making a diagnosis of eclampsia. This is not wholly true. We occasionally see cases with all the other manifestations of toxemia except the convulsions. In one case we found deep coma; total blindness had been present more than twelve hours; there was moderate edema, almost complete suppression of urine, the small quantity obtained was thick, bile stained, boiled, soiled with albumin, and had many granular and hyaline casts. No convulsion had occurred at any time. Prompt and complete recovery followed delivery and treatment. Convulsions, while alarming and probably dangerous, do not form a reliable indication of the severity of an attack of toxemia. It may be that which would cause convulsions in one case would not do so in another. We recall three cases where each one had many convulsions and yet recovered. One had 100, another 43, and another had 37. In contrast to these, we had a primipara in the wards being treated for toxemia of late pregnancy. She was near full term. She had been under treatment

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for about a week. Apparently she had made great improvement and was doing well. Suddenly she had a convulsion and did not regain consciousness. She was sent to the operating room in an undoubtedly dying condition, and delivered by Cesarean section of vigorous well-developed twins which lived, but the mother was dead within an hour and a half from the time that she was supposed to be safe and doing well, and after only one convulsion. We do not think that operation shortened her life.

Toxemia is liable to occur in subsequent pregnancies, but it does not do so in all cases. Seven of our eclampsia patients occurring in the last six years illustrate this. All were primipara. Five were delivered by abdominal Cesarean section, two by vaginal hysterotomy. None were at full term nor in labor. All of the mothers and three of the children survived. The other three children were not viable. One of these patients was a chronic nephritic with uremic convulsions. She was about seven months' pregnant. Her child was stillborn but not macerated. We have not seen a macerated fetus and eclampsia in the same case. This patient has been delivered twice since in our service, at full term, spontaneous easy labor with living child each time. There have been no toxemic symptoms, except that the urine showed low gravity, occasional casts and traces of albumin. Another whose pregnancy was not followed, was delivered spontaneously at full term, easy labor, of a living child, without history or evidence of toxemia. Two other Cesarean cases, which required repeated treatment in the hospital for periods of ten days to two weeks during their second pregnancies, were in good condition for several weeks prior to full term and were delivered by unassisted labor of healthy children. One of these patients has since been delivered a second time by normal labor. Toxemic symptoms were in evidence during this pregnancy, but by former experience, and under frequent advice, she was able to keep the toxemia in abeyance while remaining at home. The fifth case had a contracted pelvis and was delivered three times by Cesarean section. In 1911, the first child lived. She was lost track of until 1914, when she was brought in an ambulance seven months' pregnant, in coma and repeated convulsions. The child did not live. In 1915, she again became pregnant and was under our close observation and management from early pregnancy. During midpregnancy she was in the hospital twice for a few days and the mild symptoms of toxemia were eliminated. She continued well up to full term, the last three weeks of which were spent in the hospital. During this time her color was good, she was in good spirits and by repeated

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observations no sign of toxemia was found. Her diet was milk, eggs and cereals. She was at full term, when one afternoon at 5.00 P. M., slight labor pains were observed. She stated that her lunch at 12.30 that day had been only milk and crackers, and that no other food had been taken by her since. She was prepared for immediate Cesarean section. She was obstreperous when partly under ether and vomited large quantities of partly digested food in which representative articles from the regular ward diet were recognized. This food had been given her by other ward patients. Her child lived. She promptly developed inspiration pneumonia, and died on the seventh day. Soon after her return from the operating room, a right-sided hemiplegia was noticed which continued until the end. It is possible that she really had a convulsion while taking ether. It was not recognized as such at the time. The two patients delivered by vaginal hysterotomy at about six months were in private rooms at the same time. They were apparently intensely poisoned, but made good recoveries. In February, 1915, within a few days of each other, they were delivered at full term of healthy infants, after unassisted labor in the Private Pavilion of the Lying-In Hospital. One showed no toxic signs during this pregnancy or thereafter. The other required treatment in her home to keep toxemia in abeyance. We are confident that this patient would again have been eclamptic had this course not been followed.

This list can be extended by the reports of other cases. All of our eclamptics are not delivered by Cesarean section. The writer has performed 359 abdominal Cesarean sections. In twenty-five instances, toxemia of pregnancy has been the indication. These twenty-five Cesareans have been done on twenty-three different women. Eight women died. Twenty-nine children were delivered; twins in two cases. One set of twins was dead when the patient was admitted. The mother lived. Nine of the twenty-nine children delivered failed to leave the hospital alive.

It is a noticeable fact that few pregnant women in private practice, under the care of skilled obstetricians, develop eclampsia. The knowledge of this fact and our own experience prompted the statement made early in this paper: "The time to treat eclampsia is before it occurs."

Eclampsia rarely occurs prior to the sixth month of pregnancy. A preëclamptic state after this date can usually be detected if the toxic patient is under careful observation. All patients who present the earlier and minor systems do not of necessity become eclamptic. On the other hand, some patients in whom no symptoms of toxemia

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have been elicited by careful observation and frequent tests, suddenly have convulsions. They appear as though toxic material had been stored up until the tissues of the body are surcharged with poison and then under some influence such as the pains, shock and exhaustion of labor, or sudden fright, as though a spring had been released, an explosion follows in the form of convulsions. We may not be able to assign any initial cause, except that the patient is or recently has been pregnant.

Some of the very early symptoms which have led us to increase our watchfulness in the care of women during pregnancy are, insomnia, an irritability unknown to the patient when not pregnant, lack of ability to concentrate as shown by increasing difficulty in writing a letter or reading. The urine will usually show minor changes, a trace of albumin, a few hyaline casts, excess of indican, and a diminished total urea output. Urobilin and urobilinogen may prove early indication of hepatic irritation. Dr. J. C. Litzenberg reports his findings after examining 271 women. In seventy-one nonpregnant women examined, he found, neither urobilin nor urobilinogen. In the 200 other so-called normally pregnant women, sixty-two, or 31 per cent. gave a positive reaction for both urobilin and urobilinogen. Eleven of his patients had valvular heart disease and a twelfth case had infection of the urinary tract with high fever. Discarding these twelve cases there still remained fifty patients or 25 per cent. of the 200 pregnant women examined, who had no known blood discrasia or other reason for liver irritation except pregnancy, and yet they showed urobilin and urobilinogen. Examinations of this character may prove to be an early means of detecting that the pregnant woman is diverging from the normal. Acid indigestion and constipation are frequent symptoms found in the cases suffering from minor intoxication. Epigastric pain, other than that known as heart-burn and due to acidosis, is not a common symptom in our experience in either the mild or severe forms of toxemia. When found, the pain is referred to the region of the liver. In these cases where the liver is exposed either at operation or by autopsy macroscopic changes are at once evident.

TREATMENT OF THE PREËCLAMPTIC STATE.

We regard complete rest in bed as decidedly important. Absolute milk diet, not an occasional glass of milk, but from two to three quarts in twenty-four hours. Some patients cannot take milk but even these patients will do so if it is modified. They are given

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daily a hot bath, colonic irrigation with bicarbonate of soda solution, and a saline cathartic, preferably magnesium sulphate. Bicarbonate of soda given by mouth will reduce or entirely cure the heartburn and acid indigestion.

This course is followed for a week or ten days. As improvement appears the patient is allowed out of bed part of the day. Gradually cereals, eggs and nonnitrogenous foods are added to her diet. We have found that a patient under this treatment may resume her accustomed course of life by the end of two weeks. The daily hot bath, mild saline catharsis, milk and cereal diet and bicarbonate of soda are continued. After several weeks it is sometimes necessary to repeat the more rigorous treatment just outlined. In patients who have already had eclampsia, this treatment has not thus far failed us in subsequent pregnancies.

TREATMENT OF THE ECLAMPTIC STATE.

No two eclamptic patients are exactly alike. It is our endeavor to judge each case individually. The grouping of patients must be familiar to all who are acquainted with hospital work. For many weeks we may not see a case of placenta previa and then in twenty-four hours three or four will appear. This also holds true of eclampsia. One house surgeon may see few cases of eclampsia, while another will see many. We had seven eclamptics in various stages of recovery at one time in our service. Not only this grouping as to the nature of the case, but as to the severity of the attack is noted. For a time case after case will appear, some violently ill, others less ill, but they all recover. Then with apparently like cases and under the same treatment we are forced to record a high mortality.

Some eclamptics are doomed before treatment is begun. Treatment may hasten the end in some cases. Prompt delivery and treatment in no way checks the course nor postpones the fatal issue. It may rescue the child. Such children are often premature. Inevitably they must have shared the mother's intoxication. If delivered alive, we must look for a high mortality in the children of eclamptic mothers.

In general, as soon as an eclamptic is admitted, she is catheterized and the urine is examined. The blood pressure is taken. Stomach lavage with bicarbonate of soda solution and, with the tube is still in place, two ounces of magnesium sulphate in solution is poured in. Given in this way it will be retained and will soon clear the

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intestinal tract. The colon is irrigated, employing from 4 to 5 gallons of normal salt, glucose or soda solution. We prefer soda solution. The essential thing is the large quantity of fluid introduced which clears the colon and by absorption flushes the kidneys, in this way proving to be the best diuretic that we possess. If the patient is not to be delivered at once she is given a hot pack. Our endeavor is stimulate all the emunctories; to dilute and remove as much toxic material as possible. Occasionally a patient is so violent that a hot pack cannot be given. Such patients are placed in a very hot bath until relaxed and quiet. Very little internal medication is used. Chloral hydrate, sodium bromide, and morphine usually comprise the list. We have used morphine in the treatment for eclampsia for more than twenty-five years, sometimes with excellent results. In some cases the more morphine used, the wilder and more violent the patient became. We do not attempt to control the convulsions with an anesthetic. When a convulsion is about to occur the patient stops breathing and remains in this condition until the end of the same, therefore the anesthetic is not inhaled until after the convulsion has ceased. In operative deliveries we never use chloroform, but ether, and rarely gas and oxygen. Few of these patients require much anesthetic of any sort if an operation is to be performed, as they are practically anesthetized already.

The condition of some patients is such that, in our judgment, immediate delivery is imperative. In the cases where pregnancy has not advanced enough for the possibility of a viable child, we always deliver vaginally. In certain multiparæ of this class the cervix is soft and readily dilatable. These we dilate manually and deliver. This can be done if due care and plenty of time, as indicated by the clock, rather than the operator's sense of time, are employed. The tendency is, in all operators that we have observed, to perform vaginal deliveries too rapidly. It is no evidence of skill to spend fifteen to twenty minutes in forcing the cervix open and delivering the fetus and then take thirty or more minutes in repairing lacerations which might not have occurred had the whole time been employed in the process of dilatation. In some multiparæ and in all primiparæ, eclamptics with nonviable fetuses, and whom we decided should be delivered without delay, we perform vaginal hysterotomy, making an opening only large enough to bring down a foot by bimanual manipulation. Through this opening we deliver the fetus piecemeal, doing a craniotomy on the after-coming head. In these cases our sole consideration is for the mother and

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we plan to do as little damage to her soft tissue and leave as little chance for the formation of scars and adhesions, or nonunion, as possible.

In those cases in whom we have hope of delivering a viable child, where prompt delivery is imperative, comparatively few primiparæ are found who are not at term, not in labor and in whom the cervix is long, dense and undilatable. Such cases, even though they have ample pelvic room, we deliver by abdominal Cesarean section. Some eclamptic patients are at term and in labor or eclampsia has started premature labor. In these cases we do everything in our power to shorten labor without adding traumatism. In the primiparæ we wait for full dilatation then deliver by forceps or by version. In many of the multiparæ the cervix is soft and dilatable whether they are or are not at term or in labor. If time and care enough are employed it is possible to secure full dilatation without laceration. This is not true of primiparous patients. We do not employ accouchement forcè nor multiple incisions of the cervix in such cases. In other cases who do not so urgently demand delivery, we employ the Vorhees bags or pack the lower part of the uterus, the cervix and the vagina with gauze. In following this course we must remember that it will consume many hours and that the irritation is considerable to a patient who is in poor condition to endure such treatment. After delivery we continue the eliminative treatment as before indicated. We do not usually employ venesection before delivery, for we cannot tell beforehand how great the loss of blood will be during delivery. After delivery if convulsions and other symptoms continue, we do not delay in withdrawing from one to three liters of blood from the arm vein, according to size of the patient and the apparent total amount of her blood. We have seen the whole character of the cases change so promptly and decidedly in so many eclamptic patients after venesection that we are not ready to discontinue its use. We still regard it as a procedure of greatest value. Some patients who are going from one convulsion to another at short intervals with coma all the time, after venesection, have no more convulsions and the mental state clears up; others have fewer and less violent convulsions at longer intervals and then they cease altogether they regain consciousness. We except always those cases in which, no matter what the treatment, it does not modify the condition nor in any way postpone a fatal ending.

Blood pressure, considered with other symptoms in the preëclamptic and the eclamptic patient, is of value as one of the guides.

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We have not arrived at a point where blood pressure of a given height, considered alone, would induce us to follow one course and another height another course. We have seen a preëclamptic very ill whose systolic pressure was 130, another fairly comfortable with a pressure of 245. Occasionally on the first or second day after delivery an eclamptic will develop edema of the lungs, with weak rapid pulse. This condition does not necessarily occur in those cases that have lost much blood during delivery or by venesection. A number of these patients have apparently been saved by prompt and repeated cardiac stimulation and local hyperemia by means of dry cupping over the lungs.

There are other toxic patients, preëclamptics, and even those who have had one or two convulsions but quickly regained consciousness and clear mentality, in whom, for one reason or another, we attempt to continue the pregnancy, to allow fuller development for the fetus or hope that the patient may go into spontaneous labor. In such cases we follow the eliminative plan of treatment, with rest in bed and milk diet. Glonoin is given hypodermically in full doses at short intervals if the blood pressure is high. In some cases venesection has been done. It is well to keep in mind that we are dealing with patients who are in a very precarious condition and who require the closest observation, also that pregnancy is still present and that the source of intoxication, whatever that is, has not been removed. The best that we can hope in the present state of our knowledge of this condition, is that we may hold the intoxication in abeyance by removing some of it and diluting that which remains, until pregnancy is terminated. Before it is decided that pregnancy shall be allowed to continue in this class of cases, each one should be carefully judged as to whether it is advisable to subject these patients to continued danger. We are aware that the present trend is toward conservatism in the treatment of eclampsia. This is right and we are in sympathy with it to some extent. Some patients will go through to a safe termination. We are still confident that the danger for others is very great. We wish to place especial emphasis on this statement. In our experience some of these patients will very suddenly change from a condition of comparative safety to one of alarming danger. The patient mentioned earlier in the paper, under treatment for toxemia, doing well, suddenly a convulsion, delivered of twins at once by Cesarean section, and dead within an hour and a half from the time that she was supposed to be doing well. Another primiparous patient was admitted at about seven and a half months with the

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history of one convulsion and another shortly after admission, but did not appear very ill. It was decided to treat her and allow the pregnancy to continue. This plan was followed for three or four weeks. She then went into spontaneous premature labor and was delivered of a small, weakly child which lived for a few days. It is our belief that this patient came to the hospital with congested kidneys, an acute parenchymatous nephritis, similar to that of other eclamptics, who if they live, promptly and completely recover from their nephritis after delivery. We believe that this patient left the hospital with permanently damaged, chronically diseased kidneys. Still another eclamptic was being conservatively managed without interrupting her pregnancy. Morphine was given freely, elimination was being attended to. She was in a room by herself. A nurse was in constant attendance. The patient was quiet. For a moment only the nurse's back was turned and she saw in the mirror the patient rise and jump, with lightning-like rapidity through the window to the street five stories below. These cases have occurred in our own service. They are deplorable. We doubt very much if they are peculiar in kind to this one service.

Toxemia of pregnancy with eclampsia is a condition which must have been recognized and in some way treated, since very early times. In the main, that which we now note has been seen and reported many times before. Each obstetrician has a favorite plan for the treatment of this complication, in which he becomes expert. It is advisable that each group should follow the course by which it hopes to attain the best results. Some progress has undoubtedly been made, but as yet we have not arrived at the underlying cause or causes of this disorder. We are not in a position to look with any degree of satisfaction upon nor to assume that we have under reasonable control a condition which still results in a maternal mortality of from 12 to 30 per cent. and a fetal mortality of from 20 to 50 per cent. This may be the best that we can do to-day. It should be the resolve of every investigator, clinical observer and writer upon this subject, that that which is the best to-day shall not be the best to-morrow. We may look forward with considerable hope. Ingenious theories are being evolved, linked up here and there with already established facts concerning the rôle played by the ductless glands. Some questions that naturally arise are: What are included in the group of ductless glands? How is each gland co-related to other glands and to the system as a whole? Do they in any way supplement each other? What functions do they perform singly and collectively? When one or

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more of these functions diverge from normal either by overaction or by insufficient action, are we able to determine where the fault lies and to some extent correct it? It is unreasonable to believe that the rôle of the placenta and ovary can to any considerable extent, be disassociated from a very intimate relation with the harmonious working of the other ductless glands. It is still an open question whether the placenta has an internal secretion peculiar to itself, and if it has such, is entitled to be closed as a ductless gland; whether it is a reservoir for the hormones of other glands which act through it, or whether it is simply a medium for exchange of maternal and fetal blood.

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THE INDICATIONS FOR INTERFERENCE IN PREËCLAMPTIC TOXEMIA.*

BY

WILLIAM G. DICE, M. D.,

Toledo, Ohio.

Of all the dangers that threaten the pregnant woman, none is greater nor at times more sudden in its development and onset than eclampsia. Its etiology continues equally as obscure and unsettled as the treatment. Little more is known of its origin than a decade ago, and the methods of treatment swing back and forth from conservative to radical.

Convulsions have been reported without warning signs, subjective or objective, and this very phenomenon impels us to study every case in the hope that we may get some definite and reliable signal of the approach of this dread disease.

While eclampsia has been reported with low blood pressure, no albuminuria, no clinical symptoms, in over 90 per cent. of cases, careful watching will enable one to foresee the approaching danger.

The early recognition of the signs of preëclamptic toxemia is the most important duty of the obstetrician, and the early signs and symptoms often so closely resemble the harmless mechanical results of pressure of the large heavy uterus, indigestion or constipation, that only the careful observer will early detect the passing of the physiological into the pathological.

On my card given to every pregnancy case, she is asked to report at once any swelling of the face or feet, any nausea or vomiting that is persistent, any severe epigastric pain, persistent headache, disturbance of vision, or diminution in the quantity of urine.

In the latter months of pregnancy, some swelling of the feet and ankles is not uncommon, and the usual increase in weight makes the rings tight and changes the expression of the face; nausea and vomiting frequently accompany the encroachment of the enlarging uterus on the stomach, and heart-burn and indigestion are so common that at times it is difficult to differentiate it from the epigastric pain of toxemia, if other suspicious symptoms are present.

Until recent years chief emphasis has been placed on the study of the urine as an index of the toxemia, the quantity of urine voided,

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the amount of albumin, the microscopical findings, and the nitrogen output; but 10 per cent. of cases having convulsions have failed to show any albumin before the onset of the convulsions.

This has led to the recognition of two types of the disease, one with a degeneration of the kidney cells as the predominant lesion, while in the other, the liver cells are most affected with the kidney changes secondarily. In the presence of albumin, the physician should make a careful microscopical examination as the finding of casts, especially granular and epithelial, or of red blood cells indicate serious involvement of the kidney cells.

In earlier times the amount of urine voided and the amount of albumin were the chief indications for active interference with pregnancy; later the study of the percentage of urea was brought forward as an index of the toxemia. Save in an institution, accurate results are almost impossible, for the intake, as well as output, of nitrogen should be determined every few days in order to be of value, and the time required for such tests put them beyond the reach of any but the wealthy. Furthermore, Cragin reports some of his cases as showing a low-urea output throughout pregnancy, yet without symptoms of toxemia. The character and quantity of the waste products secured through urinalysis have been disappointing, and likewise chemical analysis of the blood has not shown any constant relationship to the degree of toxemia.

With the more general use of the sphygmomanometer, the study of the blood pressure during pregnancy has been more common, and in recent literature and newest text-books, its importance is emphasized.

As early as 1897, Vasquez and Nobicourt made a study of the blood pressure of a number of eclamptics, but as yet few men take the blood pressure even in their toxic cases, let alone as a matter of routine in all pregnant women. But we are coming to recognize that the periodic observation of the blood pressure is as important as the examination of the mensuration of the pelvis.

Williams ascribes the increased arterial tension of toxemia in the eclamptic woman to a constriction of the arterioles by a vaso-constrictor property of the eclamptic toxin, with a consequent reduction of the lumen, and an increased resistance in the arterial tree.

A number of men have published the results of their observations of the blood pressure in several thousands of pregnant women. Irving found that in 80 per cent. of 5000 cases, the pressure was never below 100, nor above 130; in 9 per cent. it was below 100 one

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or more times; Newell places the normal limits at 100 to 130, and Hausling at 100 to 135. While excitement, exertion, digestion, rest and change of position will cause variations of ten points, the average systolic pressure is 110 to 120. Although there may be wide variations in normal individuals, a careful record from time to time throughout pregnancy is of great value in the later months, for by determining the average pressure for each case, one is better able to place the proper interpretation on any marked rise, or, what is more frequently seen, a steadily increasing rise.

That eclampsia may occur with a normal or even a low blood pressure is shown by the history of numerous cases by careful observers, but such cases, just as those with little or no albumin are rare, are probably of hepatic origin.

Bailey, from a study of his cases, concluded that convulsions usually occur when the blood pressure reaches 200, but may occur when it is as low as 155. Where a record is kept in the early months, if the earlier levels have been low, a steadily increasing rise to 140 or 150 would be as significant as a rise from 120 to 160, and in both a thorough investigation of all the body functions should be instituted and measures taken to combat the beginning toxemia.

From the above, it can be seen that no arbitrary point can be set as the danger point, but in the majority of cases, where the average pressure has been 120 to 130, dangerous toxemia would be indicated by a pressure of 150.

The relation between toxemia and increased blood pressure is well shown in the following statistics given by Irving: In cases with a blood pressure of 130 to 140, one in thirty-two developed toxemia; with a pressure of 140 to 150, one in eleven; with blood pressure of 150 to 160, one in three; and of those with a pressure of 160 to 180, one-half became toxic, while every case with a blood pressure over 180 had toxemia.

Elevated blood pressure alone is a more frequent early sign of toxemia than albuminuria alone, and Irving reports it as the first symptom twice as often as albuminuria, when it is not found coincident with the albuminuria. Furthermore, the blood pressure is not proportional to the amount of albumin, as is proven by Lynch and Green's figures. They report two cases having 1 per cent. of albumin, with a blood pressure of 130 and 210, respectively; others with 0.25 to 0.5 per cent. albumin, with blood pressure of 190 and 140. respectively; while another with but a trace of albumin had a blood pressure of 160.

As to when we are justified in terminating a pregnancy, we believe

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that when a patient with a blood pressure which has gradually gone up from 150 to 170, in spite of proper diet, rest and eliminative treatment, and this is accompanied by one or more other toxic symptoms, whether the amount of albumin is large or not, the time for expectant waiting is ended. A fluctuating high blood pressure in toxemia is also of serious import, as it indicates a marked derangement of the cardiovascular mechanism. One cannot but conclude that the systolic blood pressure, taken throughout pregnancy, not only often gives us warning of a beginning toxemia, but is a reliable index of the seriousness of the condition.

While all writers on obstetrics speak of visual disturbances, such as blurring of the vision, spots or black specks before the eyes, or even blindness, as symptoms of a toxemia, one finds that few men doing obstetrical work fully appreciate the importance of such eye symptoms, either from the standpoint of the patient's future vision, or as an index of the degree of the toxemia.

Cragin states that "visual disturbances in pregnancy always suggest a toxemia and indicate an examination of the urine;" and Posey and Hirst believe "that optic neuritis and retinitis may indicate the basal trouble even before changes show in the urine." De Lee advises that "acute amblyopia or amaurosis demands immediate urinalysis, and if albumin or other signs of renal or hepatic insufficiency are present, labor should be induced."

There is but little found in the literature on the early changes in the retina in these cases with beginning toxemia, for the oculist ordinarily does not see them in the early stage, but rather after all the damage has been done, usually months after childbirth, when the patient finds that her vision is not as good as it formerly was.

The toxins circulating in the blood give rise to a retinitis, the first symptom being edema, later there is infiltration, then degeneration, with hemorrhages, or perhaps detachment of the retina. The degree of interference with the sight depends to some extent on the location of the lesion, whether it is in the macula or within the field of vision.

Retinal hemorrhages indicate a grave toxemia, which not only threatens the patient's vision, but her life, and it should be our aim as obstetricians not only to try and save the mother's life, but we should conserve her sight, and to this end, we should aim to recognize the eye condition in the early stages before the damage is beyond repair.

With a view of finding some additional index of the severity of the toxemia in cases of threatened eclampsia, I have recently had

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cases showing the slightest evidence of toxemia, examined by a competent ophthalmologist, and though few in number, the findings were so uniform and suggestive that I deem them worthy of report. Through the courtesy of Dr. W. H. Snyder I am able to submit his findings together with some comments, as follows:

"The three cases referred to me constitute a fair example of this type of case. In each of these there was a recognition of blurred vision, black specks, or flashes of light. In each there was a small amount of albumin. The highest blood pressure of the three was 190, systolic. The vision was not noticeably reduced, ranging from 20/14 (which is better than normal) to 20/40 in one eye of one case. In other words, neither the amount of vision nor the field of vision would have permitted one to make a diagnosis of the condition, but an examination of the fundus showed at once the true condition.

The first case showed in the right eye, where the vision was 20/14, no evidence of trouble at all; but the left eye, which had the same vision, showed, a little below and including the macula, an inability to recognize the fine detail of the fundus. This was evidently the first sign of cloudy swelling of the retina, and the space occupied by the edematous condition was no doubt exaggerated by the influence of gravity. On close questioning, she claimed that the lines in the wall paper were not continuous, and that certain details in the wall paper were not as clear as others. I had no hesitation in advising that this woman was in the early stages of a retinitis, which would eventually result in hemorrhages and marked loss of vision, as the condition was almost limited to the region of the macula."

"The second case had a vision of 20/20 in the right eye, and 20/14 in the left. In this case, the right eye was normal, except for a venous congestion on the inferior nasal quadrant of the field, and a slight haziness of the retinal details on the borders of this region and in the macula. The left eye was normal in every respect. Taking into consideration her general symptoms and the fact that she complained of blurred vision, I thought that she, too, had a beginning retinitis which would probably end in serious loss of vision if the uterus was not emptied."

"The third case complained of black specks. Her vision was 20/40 in the right eye, and 20/25 in the left. An examination of the fundus in the right eye showed a large area, including and surrounding the macula, in which the details of the fundus were hazy, more marked at the bottom of the field. The fundus of the left eye showed a similar condition, but not quite so pronounced. The evening of the day of my examination, she had three convulsions, one just before child was born and two after."

"The recognition of this condition is not an easy matter, but by direct ophthalmoscopy we are able to get a magnified view of the details of the retina, and the condition seen in this manner suggests the cloudy swelling seen in the retina in microscopic sections of albuminuric retinitis. The pupil must be widely dilated, and with the electric ophthalmoscope, the examination can be made with great

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ease, even though the patient be confined to bed. I am perfectly certain that in my earlier years of practice, I failed to grasp the significance of this almost imperceptible haze of the details and was very apt, if I found the vision normal, to fail to recognize the significance of this exceedingly slight haze in the retinal detail, and to consider that the retina had not as yet become involved. But a larger experience, combined with seeing some of the cases go through a pronounced retinitis with the resultant damaged areas, has awakened me to the necessity of recognizing the condition in a beginning stage, and I believe that this condition can be recognized with certainty very much earlier than is generally supposed. This is especially true of primiparæ, who have had no previous retinal trouble, and where any departure from the normal may be safely considered as incident upon the ensuing pregnancy; but in an older patient who has had trouble previously, it would be necessary to have a knowledge of the fundus before one could diagnose with the same certainty the beginning of another retinitis. In fact, I am not certain that the diagnosis can be made in an old damaged retina, but I expect to see some cases with Dr. Dice which will allow me to speak more positively on this point. It is conceivable that after this condition has once occurred in a retina, the recovery is not complete enough so that a beginning similar condition can be identified early and easily."

"One of these cases particularly shows a very marked haziness of detail yet, although the vision is still normal, and she is able to notice certain distortions of lines in parts of the field, but the central vision remains normal. Whether this patient in a subsequent pregnancy would develop the same condition, and whether it would be as easily identified, with the results of the former inflammation not entirely cleared up, is a matter I am anxious to test. Pathologists believe that if the condition goes no further than cloudy swelling, the cell may recover to normal health, if the circulating toxin is promptly removed. I believe the examination of the fundus is one of the most delicate, as well as most satisfactory, means of identifying this condition, and I believe it a more satisfactory test for the gravity of the toxemia than the presence of the slight amount of albumin in the urine."

"All of these patients made a most satisfactory recovery; one of them still sees a few black spots, but the vision is normal, and there are no gross lesions. But all of them went very near to a severe retinitis, which would have resulted in a distinct loss of vision because of the important area involved. It is a common experience to find in the fundus of a patient, who comes for refraction, evidences of an old inflammation, which the preliminary history has not elicited. A further inquiry into the history discloses that in some previous pregnancy the vision was blurred for several weeks, but that the family physician paid no attention to it, telling the patient she would recover after the child was born. If the area includes the macula, the vision is reduced to a degree incompatible with work, but many cases have a peripheral lesion to whose scotoma they soon become accustomed, thus minimizing the actual damage done. To

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understand these cases, one must realize that if one-quarter inch of the retina is left sound in the macula, the vision will be normal, although the field of vision is contracted; while if this quarter inch be destroyed, although the rest of the eye be normal, there will be no useful vision in this eye. From the standpoint of the ophthalmologist, the obstetrician has not paid sufficient attention to this extremely important subject."

In the cases cited above, the amount of albumin was not enormous in any, and the quantity of urine voided was never very scant; the blood pressures ranged from 160 to 190; two of them had headache, and one in addition had severe epigastric pain shortly before she went into premature labor. In the first case labor was induced, and in two it came on spontaneously, though prematurely, on the evening it was decided to interrupt the pregnancy.

Within the past month there have been two other cases of toxemia —in one the patient had no eye symptoms, and examination of fundus showed no abnormality; and while the blood pressure came down under treatment, the albumin increased a little, and labor came on several weeks ahead of time.

The other case had an increasing albuminuria, a steadily increasing blood pressure up to 165, severe frontal headache and spots before the eyes, all in spite of vigorous treatment, but before the fundi of the eyes could be examined she, too, went into premature labor.

While but one of the cases developed convulsions, there is no question but that they were forestalled by the induction of premature labor in the one case, and spontaneous premature labor in the other three, and in four of the five there were visual symptoms.

The first objective signs in the eyes in these toxic cases is a haziness of the fine detail of the fundus, the beginning of the cloudy swelling, the edema of a beginning retinitis, and it should be our duty to empty the uterus before the condition goes beyond the beginning stages. It is possible that rest, diet and active elimination may cause an improvement in the condition of the eye, but when it is once involved, only careful daily observation of the case in a hospital can justify delay, and then only when all other symptoms improve, and the eye condition does not extend. While no one symptom alone is sufficient to warrant the interruption of pregnancy, two or more, when properly interpreted by a careful observer, will usually enable one to act wisely.

Olshausen and others have emphasized the importance of epigastric pain in the later months, and especially in the presence of high blood pressure, as an ominous sign. Frontal headache, persistent, not relieved by cathartics, is likewise a danger signal.

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Hirst urges that whatever the blood pressure with albuminuria, as soon as persistent headache occurs, and especially if there are disturbances of vision, and evidence of beginning retinitis, the pregnancy must be terminated at once, and temporizing in such a case is inexcusable.

Important as is the examination of the urine and the taking of the blood pressure during pregnancy, in order that we may early detect and properly measure the results of our treatment, in the presence of a toxemia, the careful examination of the fundus of the eye is most important, the condition of the retina being a most valuable index of the severity of the toxemia.

DISCUSSION ON THE PAPERS OF DRS. POUCHER, McPHERSON DAVIS AND DICE.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—The papers just read represent the different ideas entertained with reference to the causes and treatment of this tragic obstetric complication. Owing to the imperfect knowledge of the causes of this disease, the views as to its proper treatment differ widely.

From the beginning of my practice I have been impressed by the earnestness and perseverance with which obstetricians have tried to unravel the mystery of puerperal eclampsia. The disease varies. There are hardly ever two cases exactly alike. In recent years we have more or less lost sight of the fact, which I never fail to emphasize when I discuss the subject, that some of these cases are bound to be fatal from the start and that it matters little what course of treatment we adopt. There are other cases, fortunately, the majority of which are amenable to treatment and a third class which would recover spontaneously if let alone and which, occasionally, recovers notwithstanding the treatment administered. The obstetrician is therefore confronted with a problem which is not easy of solution and no line of specific treatment can be outlined. Much will depend upon the ability, judgment, and dexterity of the attendant and the care he may be able to bestow upon his patient. It will not do to say that operative intervention is the only proper course to pursue in every case; it will not do for us to say that medical treatment alone is to be relied upon; but what we should realize, above all things, is that our greatest usefulness, our strongest weapon to combat this obstetric complication, is prophylaxis during pregnancy. A pregnant woman should place herself under competent care from the beginning of her pregnancy and the conscientious obstetrician, he who devotes himself to his cases, will be able, I am almost tempted to say, to eliminate this disease from the list of obstetric complications. You know I am a firm believer in the efficacy of veratrum viride in the treatment of puerperal eclampsia; yet I realize there are some cases which can be reached effectively only by prompt operative intervention. All cases of puerperal

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convulsions, which are sudden and wholly unexpected in their onset during the period of viability before labor or before obliteration of the cervix and dilatation of the os have occurred, are cases for the administration of veratrum viride and the so-called elimination treatment; for veratrum viride in full doses, gentle saline catharsis, hot baths, or packs, and an absolute milk diet, will often perform wonders, and end in spontaneous labor and the recovery of the patient. There is only one objection to this treatment, namely, that in too many instances, the baby is delivered asphyxiated or dead.

Toxemia developing early in the course of pregnancy is an entirely different affair. If we fail to improve the patient's condition with the elimination treatment, there is no better mode of procedure than to empty the uterus through the dilated cervix; if the toxemia occurs early in the period of viability, delivery by vaginal hysterotomy is indicated; if the convulsions come on near the end of the term, delivery by abdominal Cesarean section is the proper procedure. If the patient be in labor at the time, labor should be terminated by version, or the forceps, or both. In the latter condition the operation may not save the mother, but the life of the child is frequently saved. I am far from being convinced that the mere emptying of the uterus, no matter how promptly it may be done, relieves the toxic condition.

The last case of eclampsia I was called to see in consultation, was one in which the toxemia manifested itself by swelling of the ankles, puffiness of the face, albumin in the urine, and the presence of renal casts, fully a month prior to term. The patient died of postpartum convulsions; the first seizure occurred ten days after a normal labor at term. This woman was promptly subjected to the elimination treatment; she improved quickly and, apparently was entirely well when she went into labor. We believed all dangers were past. Her labor was not a difficult one. The milk diet and elimination treatment were continued postpartum. Yet, at the end of ten days, she had her first convulsion. Within an hour she had another. The fourth convulsion left her a paralytic and she died in coma, exactly twenty-four hours after the onset of the disease. The patient was a primipara, aged twenty-six. How will you explain the result? How might this young woman have been saved? Could she have received better treatment? No. It was one of the cases in which the best of care availed nothing. However, let us not be discouraged. I see a new vista opening up through which relief for this disease may finally come. Slowly, but certainly, the veil of mystery is drawn from the function of the organs of internal secretions and, if preventive measures fail, or have been neglected, we may be able to give relief by the intelligent administration of drugs obtained from the endocrines.

I am not a believer in the administration of morphine, chloroform, brisk cathartics, and frequent and prolonged hot baths or packs. The less vigorous the treatment in these cases, the better. Too many things done at once, or at short intervals, are as bad as, if not worse than, no treatment at all. Statistics show that surgical

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intervention in this disease has not lessened the maternal mortality in the least. If there is anything to be said in behalf of any mode of treatment in puerperal eclampsia, it is in favor of the medicinal method.

Dr. Irving W. Potter, Buffalo.—It is very evident that there is no hard and fast rule as yet for the treatment of this condition. It occurs to me, however, that the emptying of the uterus is only one step and I think Dr. Poucher in his class of cases has treated them very intelligently and has obtained excellent results. His class of cases is entirely different from that described by Dr. McPherson. Dr. Poucher's cases were not all hospital cases. They were scattered and away from immediate medical attention while the other type of cases was in an institution.

We have two classes of cases. One needs fluid. The other does not need fluid. How are we going to determine this? Only by chemical analysis of the blood and urine and if we work along these lines, it seems to me we will reach some conclusion eventually.

I should like to ask one question. Has anybody had any experience with lumbar puncture in postpartum convulsions?

Dr. James E. Davis, Detroit.—The solution of this subject must come from the domain of physiological chemistry. Much has been said about the pathology of this condition. Attention has been given to the pathologic changes in the liver and the occurrence of cloudy swelling in the different tissues. These changes in the liver are simply the end results from the standpoint of the pathology. The cloudy swelling represents the highest degree of resistance that the tissues can make against the toxic poisoning. We get cloudy swelling in a great number of conditions. For instance, in tetanus poisoning, in trinitrotoluol poisoning, in shell shock, etc. In a great number of conditions we have cloudy swelling in all of the tissues of the body. This representing the greatest possible effort upon the part of the tissues to resist the toxic condition.

The treatment that Dr. McPherson has outlined is indeed very interesting. He begins his treatment by assisting the metabolic processes and then later he continues a treatment which really depresses these processes. However, the use of morphine will do this much: it will prevent the nerve centers from having an explosion which may be the thing that turns the trick at the time it is needed, but this does not appeal to one as the rational way to treat this condition.

Much has been said about the general treatment and of doing those things which contribute to the anabolic changes rather than catabolic changes, and that means the greatest degree of resistance possible is obtained on the part of the maternal organism against the toxic products. It does seem then that relief must come through securing something that will early combat the toxemia which is produced and if we can discover this agent, then the problem will probably have been solved. Until that time, we must continue to aid the forces of resistance by having the highest possible perfection of metabolism contend with this toxemia.

Dr. James F. Percy, Galesburg, Illinois.—I would like to ask

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Dr. Davis, inasmuch as he mentioned the thyroid treatment in this condition, how much thyroid was given each day in the cases in which he used it, and how long its use was persisted in?

DR. DAVIS.—In the cases of toxemia, where we could give thyroid, we gave 5 grains three times a day of the thyroid extract, sometimes for a period of a week.

DR. PERCY.—That means of the dried gland?

DR. DAVIS.—Yes.

DR. PERCY.—There is confusion in the minds of physicians regarding the amount of thyroid in each tablet as put out by the various biological laboratories. I do not know of any "five grain" tablets of the dried gland.

DR. HAYD.—One concern manufactures five-grain tablets.

DR. PERCY.—Yes, of the fresh gland, which is equivalent as they state on their label "to one grain of the desiccated gland."

DR. PERCY.—One grain of the dried thyroid extract three times a day is simply playing with thyroid and you cannot get results with this agent in the prevention of eclampsia by this dose. In the advanced cases of nephritis, puerperal or otherwise, you have to get the physiological effects as quickly as possible and sometimes, though rarely, you have to give 50 grains a day of the dried gland for a period of one or two weeks. If the case does not seem to be urgent I give 12 grains a day of the dried gland for one week and if no physiological effects appear I give 16 to 20 grains a day for another week or until I get the physiological effects. Many of us have forgotten that the older obstetricians taught that the woman, who during pregnancy developed a large thyroid, did not develop eclampsia and that the eclamptic women never had a palpable thyroid. I do not know whether there are any statistics on this subject, but as far as I know this observation has never been disproven. Nephritis and eclampsia are terminal symptoms and their cause exists before any changes can be detected either in the kidney or in the cardiovascular system. When we have headache and inability to think straight, as was mentioned by one of the essayists and in addition, a rising blood pressure in pregnancy, the nephritis is already advanced and eclampsia is always to be thought of as a possibility. One of the best premonitory signs is the retinitis which has been so well pointed out here to-day. In addition to this, a close watch should be maintained of the thyroid gland, in order to determine if possible whether it is functionating normally or not. If it is feared that it is not, animal thyroid substance should be administered. This agent is a most active stimulator of metabolism. It undoubtedly also acts by converting the albumin of the nephritic into urea and as we know, urea is one of the best diuretics.

I am convinced from a rather large experience that in the use of the dried thyroid gland of the sheep, we have one of the, if not the most effective agent that we can use in the early and late stages of the nephritis of pregnancy; but it is of no especial effect in small doses. Our idea of the use of the thyroid gland as a medicinal agent

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has been influenced undoubtedly by the symptom complex of exophthalmic goiter, but the medical use of the gland, even in the large doses, does not give us the same picture at all. I have never seen any harm come from its use. When the heart beats 120 or more times a minute, or there is a fine tremor of the separated fingers when the arm and forearm are extended, we will know that we are getting the physiological effects that we must have in order to get the results we are after. This is one of the most important subjects that we can discuss. The effects of eclampsia, when it manifests itself both upon the patient, the family, to say nothing about the attending physician is most tragic, and any light that can be thrown upon its management, no matter how little it is, is worth considering. I believe, however, that the administration of one grain of the dried gland three times a day is ineffective and therefore of no value.

DR. HUGO O. PANTZER, Indianapolis, Indiana.—In a discussion of this disease and, pardon the expression, of our frantic efforts to afford relief in the final stage, we should have in mind the underlying factor, the pathology. The last paragraph in Dr. Davis' paper alludes to this. He says not until we understand the disturbances of physiological chemistry will we be able to obtain guidance for our efforts and unanimity in the treatment of this disease. It is not only a disturbance of the physiological chemistry resulting within the organs themselves, which we must consider, but also the disturbance of function, such as of the endometrium by toxemias and bacteremias, that are seated elsewhere in the body. When we speak of nephritis or of a hepatitis we have in view a definite disease. And yet, toxemia and bacteria that precede and cause them have touched every cell in the body, their effect is not restricted to one or several organs in the body, but prevails, more or less in degree, in all glandular organs and disturbs their respective functions. These disturbances are marked clinically by hypo- and hyperactivity, variously in different cases. With this in mind let us hark back to what our antecedents in medicine have taught us, as for instance, the proverbial saying, a tooth for every child, meaning thereby that a woman in the average case will lose a tooth with every child. In other words, this observation impresses us that toxemias extrinsic of pregnancy prevail with especial force, when the system is taxed with the extra function of pregnancy.

It has been claimed that we should have these women under observation from the beginning of gestation. The same rule holds good for the cases of apoplexy: they should be treated twenty years before the apoplexy occurs. It means rigid prophylaxis to be practised in all humans at all times.

Let us be more observant in detecting and treating vigorously all existing infections. This before and during pregnancy, and before parturition occurs, will advance progress in the knowledge and treatment of diseases in unexpected degree and importance.

DR. J. HENRY CARSTENS, Detroit.—Long ago we found that women who had eclamptic convulsions had a small thyroid and that

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those women that had the large thyroids did not have any convulsions. I called attention to that fact in the earlier years of my practice, and a good many of my colleagues used to poke fun at me, yet every year or so the same subject was taken up and discussed.

We are told that there are pathological changes in the liver. I have made postmortem examinations and have found that there is congestion of the brain in every one of the patients who died of puerperal convulsions. We also find trouble with the kidney. In other cases we find no change in the kidney. There is something back of all that and it seems to me, from the discussion we have had here on the ductless glands, that this is going to solve the question. As Dr. Davis has just said, when you give thyroid extract in 5-grain tablets, do you know what is in that thyroid? Are there any secretions that are supposed to bring about the various metabolisms? We know absolutely nothing about it. Until we can get the active principle of the ductless glands or at least standardize them and know how much we can give, we cannot expect any benefit from it so far as I can see. It is not a question whether the thyroid but whether the pituitary produces this change, and the substitution of one kind of secretion for another, the inhibiting or stimulating secretion of one kind of ductless gland by the superabundance of another. These are all questions we have to look into and try to solve and men like Dr. Davis, Dr. McPherson, and others, who have control of large obstetrical practices and have a great many of these cases, may by systematic and thorough investigation in the future be able to show us some way out of it, more so than some of us who perhaps see a case in a year or two or three in consultation which do not amount to much.

So far as the treatment is concerned, I have made use of all the methods. I have used veratrum viride; I have used large doses of chloral; I have used chloroform, and in fact, everything that has ever been recommended, one or the other, or all of them together, and I have made use of sections, and so on, and when I saw three or four cases make good recoveries I was pleased; but after I saw two or three more patients die, I became meek and humble. After all these years, I have made up my mind that in the present state of our knowledge treatment really does not seem to have very much effect. If we get a run of successful cases we are lucky, particularly if the mortality is small, and then we may get another series of cases where the mortality is large. But I noticed one thing formerly in my practice and called attention to it a number of times, namely, that women who are troubled early in pregnancy, with a great deal of vomiting, until, finally in the course of the fourth month these symptoms subside, must be carefully watched when they reach the sixth or seventh month. These women are apt to have puerperal convulsions.

Dr. James A. Harrar, New York.—We hear a great deal about "individualization" in the treatment of various obstetrical conditions and particularly in eclamptic patients. Individualization is good, but it must depend upon broad general principles and

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not be an excuse for letting the desperate condition of a woman befog the obstetrical judgment of the man taking care of her. There is no question but that she is an individual, but remember the rules.

I have been connected with the New York Lying-In Hospital for thirteen years as attending surgeon and have seen during that time a good many cases of eclampsia. In looking up my records I find I have personally delivered twenty-eight cases in the hospital service with three deaths. In no instance did I consider it necessary to perform Cesarean section. A man who employs Cesarean section in the treatment of toxemia or the preëclamptic stage with good results is a better surgeon than he is an obstetrician. You have time in cases of toxemia to induce labor with bags or gauze packing, and you will leave the woman in better shape, especially for future pregnancy, than by Cesarean section. The maternal mortality after Cesarean section is higher than after induction of labor. In the study of the death reports of the Lying-In Hospital which I have had the opportunity of making this summer, I have not been favorably impressed with the results of vaginal or abdominal section in the treatment of eclampsia.

In studying the case histories of eclamptics at the Hospital, I find that the shorter the elapsed time between the first convulsion and the delivery, the better the prognosis for both mother and child. If the patient does not promptly deliver herself it is proper to help her along, but only by methods that do not infect tissue or increase shock. I do not believe in accouchement forcè or in a cutting operation to hasten delivery in eclampsia.

Since watching the use of morphine as carried out by Dr. McPherson, I am convinced that the results are, on the whole, good. In a long series of cases reported from the Rotunda Hospital, they have had 8 per cent. mortality by the use of the morphine treatment. Our results in a short series approach those. As to the cause of eclampsia, we know little or nothing. It is at least toxemia, but it is not an acidosis. According to the laboratory investigations of Losee and Van Slyke, acidosis is a negligible factor as proved by the examination of the blood in eclamptics.

As to the anesthetic used, we know chloroform is bad. Nitrous oxide is also bad, because it temporarily raises the blood pressure and might precipitate a cerebral hemorrhage. Dr. Losee, pathologist at the Lying-In Hospital, tells me that in his autopsies, cerebral hemorrhage is present in almost all women who die of eclampsia. Of course with a hemorrhage in the brain it does not matter how we deliver, the patient will die anyhow.

Dr. Abraham J. Rongy, New York.—It seems to me, that as long as we do not know the etiology of eclampsia, we will be unable to institute correct treatment for this condition. In the treatment of eclampsia we cannot lay down a general rule to be followed in each and every case. It is just as bad to adhere to the conservative plan of treatment advocated by many obstetricians as it is to follow the radical method advocated in many well-known clinics. However,

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any plan of treatment for all cases will result in the saving of a certain number of patients.

Now what can we do from a clinical standpoint to guide the physicians in general practice, as to what form of treatment they should adopt in a given case? Personally, I have three cardinal symptoms which guide me in the treatment of a case of eclampsia.

1. If the onset is acute and the convulsions frequent and no lucid intervals between convulsions.

2. If the patient is catheterized and very little urine is obtained.

3. When the peripheral circulation of the patient is disturbed, the skin presenting a mottled appearance.

Patients presenting the above clinical picture are very toxic and have to be dealt with very promptly. The uterus has to be emptied. If it is in the early period of pregnancy, vaginal hysterotomy will probably be the operation of choice. If it is in the latter period of pregnancy abdominal Cesarean section may be employed. If, however, a patient is seen in whom the attacks are not so acute and there are lucid intervals between the attacks and the kidneys are more or less functionating, as evidenced by the amount of urine obtained on catheterization, we can temporize and treat them conservatively.

Cases of eclampsia, like cases of typhoid fever or pneumonia, cannot all be put in the same category and be treated alike.

Regarding the treatment by thyroid extract as pointed out by Dr. Percy, I feel that this form of therapy has not materialized as some of us have been led to believe by those who use it extensively.

As to Dr. Potter's question in reference to lumbar puncture, we have two cases of postpartum eclampsia in whom spinal puncture was performed. So far as we could determine there was no perceptible effect upon the convulsions.

DR. ZINKE.—What was the mortality?

DR. RONGY.—One died and one recovered.

I think you will agree with me that rational therapeutics must go hand in hand with a rational pathology. We have waded through pages and pages of literature on this subject only to find that since 1839 when French and English physicians detected albumin in the urine of eclamptics, until the present day there has been a controversy going on in regard to the pathology of this condition and its treatment. In the matter of theories, there has not been a field in medicine that has developed such originality, such patience, such investigation, and such thoroughness and such prodigality of ideas as puerperal eclampsia, and it is the same to-day as it was fifty years ago. In the early years of practice I saw many eclamptic cases which were largely attended by German midwives. Each woman attended an average of one hundred cases of child-birth a year. I had several cases of puerperal eclampsia that these midwives attended among the 600 cases of confinement annually cared for by them and also among my own patients so that I saw in the earlier years of my practice more than the average number of cases of eclampsia.

We were at our wits ends to what to do for these women. The

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treatment in the main did not answer the purpose. We early discovered that a great many of these women recovered under any treatments; a great many of them died under all treatments. Some of them recovered under no treatment and some of them recovered under bad treatment. It was a question as to what course to pursue in the individual case.

For many years we have tried to have supervision of our patient from the time of her known pregnancy until that condition ceases, and we think it is the duty of the obstetrician, the everyday man, not the scientific specialist, to do what he can for them during that time to obviate, so far as possible, what may take place afterward. One man will tell you that he has had success with one form of treatment, and another will claim that he has achieved success with a different treatment. The question arises, what was the condition of the kidney in one case and what was the condition of the kidney in the other case? One practitioner may have a case to deal with in which he has the kidney of pregnancy, which is an enlarged kidney, and the termination of pregnancy will avert death, while in another case it does not. When we were called in the earlier years to see a woman in puerperal convulsions, we examined the condition of her heart and pulse and if the indications warranted we bled her 10 or 20 ounces. Under that treatment some of them recovered and some died. Our course was guided by these three cardinal points: first, control the convulsions; second, eliminate the poison, and third, terminate the pregnancy. That was done years ago and we are doing it to-day. Unfortunately in those days we practised medicine before the advent of aseptic surgery. We did not dare do Cesarean section. Up to that time, 1868, there was not a single recovery from Cesarean section in the Hotel Dieu of Paris. We stood at the bedside and looked at the livid and distorted countenance, with stertorous breathing, until almost in sheer desperation we did what has been characterized as bad treatment, we terminated pregnancy largely by manual dilatation and version. Now, that may have been a bad procedure, but it was the best thing we knew at that time. In multiparæ, dilatation can be done very easily. I think we were among the first in America to do it. We do know that we had patients get well, although some of them died. In carrying out of the first principle of treatment, namely, controlling convulsions, Dr. Zinke says that chloroform is dangerous; that it induces a condition that may precipitate death. Maybe it does, but we used it largely in the early days. The fault in its use was that we gave the woman chloroform after the convulsion and only got its effects when the woman was quiet. We did not get the effect from it during the convulsion. We made use of the various emunctories to eliminate the toxins. What is the toxemia? One man tells us it is a uremia. It has been proven that women get puerperal convulsions and have no albumin in the urine. I have had more than one such case. Of course, it is a matter of my own experience; it may not be yours. Other men tell us that there is a hepato-toxemia and the postmortem examinations show evidences of the same. There

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are hemorrhagic foci in the liver cells; small points of necrosis, sometimes large, and a condition of acute hepatitis or acute yellow atrophy. There is a deficiency in the excretion of something and we call it a toxemia. But unfortunately, a woman, as soon as she becomes pregnant, becomes a regular factory for toxins and every woman should be watched, no matter whether she has albumin in the urine or not. In those women who present symptoms of toxemia, it seems to me that there are various things that we can do. I do not know what is meant by expectant treatment to tide the woman along, except to meet such symptoms as they arise. If you try to get rid of the poison in any way, do it with your hypercatharsis or diaphoresis. We used to place these women between two rubber sheets, insert a rubber rectal tube, irrigate with hot water and get them to sweat. We would give them croton oil when they could get it down and also veratrum viride.

For a great many years I have resorted to the induction of labor in any woman who has a large amount of albumin in her urine with casts, who has any other symptoms, such as cephalalgia, vomiting, or nausea, disturbance of vision, or any mental disturbance at all. I induce labor in such cases at the seventh month. In doing that we had some children that lived and we had undeveloped children who died. But I know if I were called to a woman seven months pregnant in this condition I would induce labor and not rely on Cesarean section. If, however, I was called on during eclampsia, with an undilated os, I would resort to Cesarean section. The treatment of the disease depends upon whether you are called in the antepartum, intrapartum, or postpartum stage, and it differs in all cases.

DR. POUCHER (closing on his part).—I have been very much interested in the papers of Drs. Davis and McPherson and if I were a practising obstetrician I think I would be enthusiastically in favor of prophylaxis; but I do not want you to understand that I am an enthusiast for abdominal Cesarean section for puerperal eclampsia, for I am not, because you will notice I cited two Cesarean sections in this series of twelve cases during the eclamptic stage. Both of these were cases in which delivery by any other means did not seem possible to me.

My series of preëclamptic operations were principally done with a view of preventing convulsions.

In regard to Dr. Percy's reference to treatment with thyroid extract, one of my seven preëclamptic operations was done upon a woman who was suffering from severe hyperthyroidism with a goiter.

DR. MCPHERSON (closing on his part).—The title of my paper was "The Conservative Treatment of Eclampsia." The word "eclampsia" means *convulsions*. In other words, the treatment of a pregnant woman, or recently pregnant woman, suffering from a convulsive toxemia. The paper did not apply to women having the toxemia of pregnancy which is nonconvulsive, to hyperemesis or any predelivery toxemias, with the exception of the one class

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which comes to us in convulsions and which we have to treat at that time. I firmly believe that a large number of these cases can be prevented by careful treatment beforehand. I do not think there is any argument about that. But that was not the subject of my paper. My paper was the treatment of the case after it had happened and as I stated to you, it was simply a report of what had taken place in fifty-five cases taken as they came, every one of which was in convulsions when first seen and the results I have given to you for what they are worth.

You may say you do not believe in treatment by morphine, but the figures of the cases treated by this only show a certain thing and it is up to the men who say they do not believe in the morphine treatment to show us that their cases treated in the other way do better. I believed for a long time that the use of morphine was wrong, but I believe now from what I have seen of these fifty-five cases that I was wrong instead.

Of course, we have heard a good deal about pathology and the modern treatment directed by the pathology. I stated in the paper that it was only possible to get at a final solution by understanding clearly the etiology; but we cannot stand around and let these women die simply because we do not know the etiology.

To recapitulate: the best figures which have been produced in this country in the treatment of women suffering from convulsions at the time they were about to give birth to a child, a condition commonly known as eclampsia, up to the time I reported the present series, have been produced by the Sloane Maternity Hospital in the last 15,000 cases, where the maternal mortality was 14 per cent. It was something like 28 per cent. before and there they have used a modified conservative treatment. In my series of cases the mortality has been reduced to 9 per cent. by simply extending the same treatment a little bit further. I am perfectly willing to admit that you will occasionally see cases which you must deliver, but what I am particularly interested in is that we want to consider assisting labor by means of dilatation with bags or packing, and not rush in and do rapid accouchement forcé and shock a patient who has already been shocked to a marked extent from which she may or may not recover. That is the only point in the paper. I do not believe the treatment I have advocated is a panacea. I do not believe there is any such thing in medicine as a panacea. If you take the fifty-five cases I have reported, and those of the Rotunda Hospital from 1903 to the present time, covering a period of fourteen years, where the mortality was reduced to 9.5 per cent., together with the reports of other men who have had opportunity to see and treat similarly other cases, you will find the treatment I have presented is of a great deal more value than any other method we have at the present time.

One other point came up in regard to the question of lumbar puncture, and Dr. Rongy spoke of it. I have two cases in which lumbar puncture was resorted to in postpartum eclampsia, one of which proceeded to get well after the lumbar puncture.

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DR. CARSTENS.—How many of these fifty-five cases were primiparæ and how many multiparæ?

DR. MCPHERSON.—I cannot tell you offhand, but a large majority of them were primiparæ because the greater number we have are primiparæ.

DR. DAVIS (closing on his part).—I wish to call particular attention to what I believe is a real danger in continuing pregnancy in the presence of pronounced toxemia. That is, the danger of establishing a chronic nephritis by prolonging the excessive demands of eliminating irritating material by the kidneys and very probably also producing permanent injuries in the liver. We not infrequently resort to venesection with good results, reserving its use until after delivery, when we know that there will be no other loss of blood.

I believe that further light will be thrown upon this subject of toxemia of pregnancy through increasing knowledge of the workings of the ductless glands. We know already how potent the extracts of some of these glands are. Until they are better understood there is great danger in their general use.

I believe the eclampsia poison is a complex one. It is too much to say that obstruction of the intestinal contents occurs, but there must be a slowing of its passage through the gut—a stasis—and with this stasis, decomposition occurs. This decomposing material finds ready access to the liver through the portal system. The liver above all the other viscera, is the organ where we invariably find the greatest destructive charges at postmortem examination in eclamptics.

DR. DICE (closing).—I realize that my paper would appeal more to the men in general practice than to surgeons who see these cases when they have already had convulsions. It is in the prophylaxis of this condition that we must have the best treatment. Many of you men who are not in the active practice of obstetrics naturally do not see these cases until they are brought to the Hospital, or until you are called to see them in convulsions. My plea has been for a careful observation of these cases beforehand and I simply called attention to the symptoms which, after rest and elimination and other treatment have been instituted, indicate that we are near the end of the waiting period. Personally, I would hesitate to do or to advise Cesarean section simply for preëclamptic toxemia. It seems to me, that in a large majority of cases we will get better results by inducing labor, so far as the future health of the patient is concerned, a more gentle means.

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THE ALCOHOL DRAIN IN SEPTIC CASES REQUIRING CESAREAN SECTION.

BY

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THE following case will illustrate the point I wish to make in my previous paper on the alcohol drain in septic cases requiring Cesarean section.

July 14, 1910, Mrs. E. H., aged twenty-three, an American by birth, was sent to my service at St. Barnabas Hospital with the following history. Her last menstruation was on Oct. 14, 1909. She was in perfect health and had not consulted any physician during her pregnancy. On July 12th, at term, the patient had slight irregular labor pains at 9.00 P. M., which later became regular and quite severe. The midwife, who was in attendance all night, sent for a physician at eight in the morning after the patient was in labor for twenty-four hours. At 10.00 P. M. the os being fully dilated, a high forceps was attempted but failed to deliver the child. The patient was allowed to go on in labor until 8.00 A. M., July 14th, that is, forty-eight hours after labor began, when another physician was called. At this time the patient had a temperature of 104°, pulse 130, and had had two chills. She was considered by her doctor a very sick woman. He also tried high forceps delivery but without result. At 11.00 A. M., after a careful examination at the Hospital, the diagnosis of rachitic flat pelvis was made and the child was found alive. The temperature then was 105°, pulse 140, urine somewhat bloody, the perineum and vagina were deeply lacerated. The cervix could not be felt and the membranes had ruptured. The position of the child's head was L. O. P. There was a distinct caput succedaneum, and the discharge from the vagina had a distinctly unpleasant odor. As the patient was in a serious condition, it was decided to apply high forceps; and if this failed, to do a Porro operation, but this did not meet the approval of the woman or her husband. The patient said she would rather die than have her uterus removed and the child, being still alive, killed. After another attempt at high forceps delivery failed, the abdomen was opened in the median line and the uterus eventrated. The abdominal cavity was very carefully walled off. It was a very interesting sight to see the sharply contracted ring of Bandl. I decided to make my incision into the uterus from horn to horn, so that I would be farthest away from the vaginal outlet, the possible source of infection. A live child was born and the placenta removed. The uterine incision proved that the wall was less than ¼ inch in thickness, and when the

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uterus contracted and the wound was repaired, the muscle was less than ½ inch in thickness. The incision was closed with No. 2 plain catgut, and sutures in three layers were used. The abdomen was closed with No. 1 plain catgut for the peritoneum, No. 1 chromicized gut for the muscle and fascia, and No. 1 catgut for the skin.

As I felt that this patient was critically ill and her chances for recovery were slight, I naturally thought of the alcohol drain, the treatment that has been giving us such wonderful results in puerperal septic endometritis. After the abdomen was closed and dressed, I introduced into the uterus through the vagina 4 inches of a rubber tube, No. 22 French. This tube was about 2 feet in length and had a funnel-shaped attachment. Around this tube a strip of iodoform gauze 2 inches in width was lightly packed. The vagina was also packed with the same material. Two ounces of a 25 per cent. solution of alcohol in water were allowed to flow slowly through the tube and moisten the gauze in the uterus and vagina. This was done every two hours, day and night, for four days. Twenty-four hours after Cesarean section the patient had a severe chill, the temperature remaining at 105°. On the third day the temperature came down to 102,° and pulse 90. On the fourth day the temperature was normal and remained normal. The tube and gauze were removed on the sixth day. On the twelfth day the patient developed a phlegmasia alba dolens of the left thigh. On the twenty-second day she left the hospital with a live and nursing baby in good condition. The patient still suffers from a slightly swollen thigh.

On Feb. 12, 1915, I was again called to see this patient after she had been in labor for eight hours, as her pains had suddenly ceased. An examination showed that her uterus was ruptured and the child in the abdominal cavity. The abdomen was opened and a dead child removed; the old scar in the uterus which had ruptured was excised and repaired.

May 10, 1916, that is, fourteen months later, she was readmitted to the hospital being eight and one-half months pregnant. I suggested Cesarean section, which was accepted, and both mother and child recovered.

Besides the above, I have had two similar cases recover following the use of the alcohol drain. My friend Dr. Strasser had one case, Dr. Hassling three cases, Dr. Minningham one case, Dr. Edgar Ill, two cases; all of these ten cases were severely septic and all were treated in various ways by physicians other than the operator. The septic condition in three of these cases was so severe that sloughing of the wound occurred and alcohol made its appearance in the abdominal incision. These cases nevertheless recovered.

In bringing this very interesting subject before this Association, I make no claim for a new treatment, as this method was brought before you at a meeting held in Niagara Falls, Aug. 18, 1897, under

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the title "Treatment of Puerperal Endometritis by the Carossa Method," by my brother, Dr. Ed. J. Ill. But as far as I know, I was the first one to use the alcohol drain following Cesarean section on previously infected cases. I doubt if I would have had the courage to use it in the first case, if I could have gotten the permission to do a craniotomy and embryotomy, or to do a Porro.

We have used the alcohol drain in septic endometritis following labor for many years with excellent results. Dr. A. F. Dowd read and published in the *New Jersey Medical Journal* a paper reporting 105 cases treated by this method at the Newark City Hospital, with only twenty deaths, occurring mostly in moribund cases. I am speaking of these results, as we have no connection with this hospital. The treatment is used extensively in our city and its surroundings with most gratifying results. It has been the custom of most of us to avoid Cesarean section in septic cases. The results and experience in ten cases in the hands of five different operators justify this suggestion that hereafter, whenever the child is alive, and cannot be born through the normal passage, the patient being septic, a Cesarean section should be done, followed by an alcohol drain.

DISCUSSION.

Dr. August A. Strasser, Arlington, N. J.—The discussion of Dr. Ill's paper naturally falls into two categories; first, the one in which we must take up the criticism and the answer to such criticism of performing Cesarean section in septic cases. Second, the treatment of a uterus that has been emptied of its contents by Cesarean section and has become septic, by the Carossa treatment as advocated by Dr. Edward J. Ill, in an earlier paper and which is almost universally used in this part of the country, popularized by his statements and by his teaching and use. Of course, it is perfectly obvious that the criticism directed against the opening of a uterus that is potentially septic is this, that knowing such to be the case it is jeopardizing the woman's life where there is a distinct desire for progeny. Our first desideratum is the saving of life; our second to preserve a functionating organ. Under these circumstances, it is perfectly right and proper that if we know the uterus is only potentially and not actually septic, to do a classical Cesarean section or a Cesarean section through the extraperitoneal route and to deliver the child, provided it is viable and the mother is anxious to take the risk. However, when the Cesareanized uterus is proven to be absolutely septic afterward, the treatment of it is one that is of grave moment. You can, of course, remove the uterus by a Porro, thus sterilizing the woman for future progeny. You can follow out this treatment which we have used in ordinary septic endometritis, the Carossa method, and the report that Dr. Ill has given us of ten cases amply justifies it as an expedient to be used when

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such an unfortunate occurrence takes place. For that reason it is worth while and, in the very important paper that Dr. Ill has presented to us to-day, it is well to keep in mind when such a possibility occurs. To remove a septic uterus following Cesarean section is not a necessity and a trial of the Carossa treatment is certainly well worth while. In those cases we have had in which there has been sloughing of the abdominal wall and a discharge of the alcohol through the wound, there has not resulted any material damage to the women, for all of them have gotten well promptly.

DR. ALBERT GOLDSPOHN, Chicago.—My experience in obstetrics is small, but we all get these neglected, extreme, and usually infected cases brought into the hospital when other attendants have gotten to the end of their means, and most of these were treated by pubiotomy with good results. So far as my experience goes, both mother and child have recovered.

Why is it that in this country suprapubic extraperitoneal section is not favored? We hear little or nothing about it, but in Germany in the class of cases Dr. Ill has related, the women would be treated chiefly by that method and with good results. Why is it that this operation has not become more popular in this country?

DR. EDWARD J. ILL, Newark, N. J.—I have talked so much on the question of the alcohol drain that my professional friends around here know all about it. In going about I have had some practitioners say to me that they did not get the same results from the use of the alcohol drain that I did. One very prominent obstetrical teacher told me he had to give it up because of the bad results. I did not understand why he should have such bad results from its use. I asked him what he did. He brought me a rubber tube nearly an inch in diameter and said, "I make sure that I get the whole cavity flushed, and in order to do so I put this rubber tube into the uterus and attach a smaller rubber tube and inject the alcohol." That is all wrong and I told him so. It so happened that one of my colleagues was called to see a case that this gentleman had delivered and the woman became septic and my colleague showed him how we applied this alcohol drain. (Here the speaker demonstrated the application of the drain on the blackboard.) You introduce the rubber tube and fill all the spaces loosely with iodoform gauze.

DR. CARSTENS.—What strength of iodoform do you use?

DR. ILL.—Ten per cent. Be sure that the tube never goes up to the top of the fundus. Shove the tube along until it reaches that point, and withdraw it for half an inch. Very soon the uterus will contract, and if this end of the tube is not slightly withdrawn you may get decubitus at the upper end of the tube. Having done that, you must adopt some method which will keep the tube in place. You may suture it to the cervix, but I would suggest that you do not do that, as you must not inflict new wounds in septic tissue, but attach a string. This tube is about number twenty-six French. There is a white ring vulcanized into it, and that white ring is just inside the vulva. In the ordinary case of sepsis it is left there from three to four or five days. That ring is for the attendant to see

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and know that the tube has not slipped out. If you introduce the tube it will slip out unless you fasten it in some way. After the tube has been inserted, the portion of the tube which emerges from the cervix receives a double loop of string which never slips one way or the other. Then we tie the gauze as it leaves the uterus firmly to the tube, with this string, and fill the vagina with the rest of that 5 yards of gauze. Having done this, 25 per cent. of alcohol is put into the funnel and allowed to flow slowly into the uterus. In some of the earlier cases we operated in tenement houses and any attendant could look after the tube. We were afraid to take these cases to the hospital.

DR. KEEFE.—How long do you leave the gauze in?

DR. ILL.—The gauze is allowed to remain in until the temperature goes below 101°, usually from three to five days. An objection claimed against this alcohol drain is that it does not remove the poison from the system. You heard yesterday that it was the practice to let certain obstetrical cases "stink" themselves out. Would you let any other septic cavity stink itself out, such as the nose, the ear, the gall-bladder, or the appendix? You would not think of it. While this method may not prevent a septic process in the system generally, it does prevent new infections from the septic cavity. The system throws off a certain amount of poison. You do not allow any more poison to enter the system. You prevent absolutely with alcohol the further decomposition of these particles of material that are in the uterus. We know that a 25 per cent. solution of alcohol penetrates dead tissue very much more than a 50 per cent. or a 90 per cent. solution. We know that from our laboratory work. When we make a microscopic section of a piece of tissue, we put it in a 25 per cent. solution for penetration, later into a 50, 75 or 90 per cent. solution. It is quite different whether you put alcohol in or carbolic acid or any other antiseptic. These strong antiseptics will coagulate the outer layer of dead tissue, but will never penetrate septic dead material as alcohol will do. Nor does alcohol affect live tissue. I apply the alcohol every two hours. It runs out along the tube.

DR. ABRAHAM J. RONGY, New York.—May I ask Dr. Ill a question? Was there absolute contraction of the pelvis in these cases? In other words, did these women suffer from an absolute contraction of the pelvis or a relative disproportion?

DR. ILL.—There was absolute contraction of the pelvis.

DR. RONGY.—So that the normal birth of the child was impossible?

DR. ILL.—Yes.

DR. RONGY (continuing).—There are a certain number of cases in which attempts at the use of the forceps have been made in which a disproportion between the fetal head and the pelvis exists. In such cases, if the child is still viable, we still have another procedure which we may resort to, namely, pubiotomy. In cases that have been misjudged and neglected, pubiotomy offers the best chance for delivery both to the mother and the child. Last Spring I reported

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twenty-eight cases of pubiotomy which were performed in exactly the class of cases that I have described above.

We must be careful in performing Cesarean section in cases who had a great deal of manipulation, either by the family physician or midwife. The danger for the mother is too great. The mortality of Cesarean section in this class of patients is more than 20 per cent. We have no right to impose such a risk on the mother for the sake of a child which is not fully viable. The fact that the fetal heart sounds are still audible does not mean that the child is fully viable. Such patients if possible, should be delivered by the vaginal route.

DR. EDWARD A. WEISS, Pittsburgh.—Acting on the suggestion of Dr. Ill, I have used this method but found some difficulty in the introduction of the gauze properly. Recently it has been recommended to treat the infected uterus with Dakin solution through the Dakin solution tubes. The Dakin tubes are small rubber tubes covered with Turkish toweling. These are easily introduced and a cross tube which fits the smaller tube can be so adjusted that the cross tube lies in close contact with the cervix. There is no likelihood of the tube slipping out of the vagina, and then the alcohol instead of Dakin solution is allowed to penetrate every two hours as Dr. Ill has recommended.

I would sound a note of warning against the use of Dakin's solution in the uterus. In one case seen in consultation it had been used with disastrous results, due to the enthusiasm of the attending physician. The use of alcohol as recommended by Dr. Ill, with the modification of the Dakin tubes, will prove very efficacious.

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THE TREATMENT OF ECTOPIC GESTATION BASED ON A STUDY OF 100 CASES, WITH A REPORT OF TWELVE CASES OF REPEATED ECTOPIC PREGNANCIES.

BY

ABRAHAM J. RONGY, M. D., F. A. C. S.,

New York.

At the meeting of this Association in 1910, Dr. Ralph Waldo presented the results at Lebanon Hospital of the deferred operation for extrauterine pregnancy. His study was based upon an analysis of eighty-one cases, about 70 per cent. of which were brought into the hospital in profound shock. None of the patients were operated unless they showed signs of recovery from the shock which followed the hemorrhage. It was argued by the author that a woman suffering from a ruptured ectopic pregnancy seldom, if ever, dies of the hemorrhage, but of the shock which usually follows the hemorrhage, and if the patient is subjected to the additional shock of the operation, the chances of recovery are minimized.

This contention was supported by Robb, Sampson, and many others. Robb proved experimentally that a hemorrhage will cease in from fifteen to twenty minutes. He also maintained that a woman who weighs 130 pounds must lose 4 pounds of blood before she will succumb from the effects of the hemorrhage, and so large an amount of blood is rarely found in the free abdominal cavity during an operation or postmortem examination. Robb further contends that the sudden removal of a large quantity of recently accumulated fluid in the abdominal cavity, before the vessels have had time to adapt themselves to the altered mechanical conditions, is dangerous and may be followed by syncope. He maintained that patients in whom the bleeding wound is sufficient to cause death are rarely seen in time to be saved by operation, and so long as there is reasonable evidence that an immediate operation may be the wrong procedure, it is our duty to hold our hands and leave something to nature.

At that time there were two distinct schools—one advocating the immediate operation, the other the deferred operation, for ruptured extrauterine pregnancy. Since then the two schools

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have somewhat changed their attitudes on the question. They learned that it is impossible to formulate a general method of procedure which may be applicable to all cases of ectopic pregnancy. Most of us have come to realize that individualization must be the keynote to the success of the treatment of any pathological condition we may encounter.

I have been particularly fortunate in having had the opportunity of observing both methods of treatment. During the time I was associated with the service of Dr. Waldo, practically no case of ectopic pregnancy was operated until the patient began to react from the shock. Our interest in this method of treatment was very keen. Every case was watched very carefully. Our service was the only gynecological service of any importance in the city of New York, in which the diagnosis of ruptured ectopic pregnancy did not spell immediate operation. Our results at that time compared very favorably with the results of other hospitals.

However, in the year 1911, two cases which terminated fatally, because the operation was delayed, entirely changed my attitude toward this question. These patients died before any operative measures were instituted. Since then the majority of patients in my service are operated as soon as possible after their admission to the hospital.

The series of cases I am to report now consists of all cases admitted to the gynecological service of Lebanon Hospital during the past eight years. The majority of these patients were operated on soon after their admission to the hospital.

A comparative study of the two series of cases shows very little difference in the final results. In both series the morbidity and mortality were about the same. We are really not in a position to state which is the better plan of treatment, unless we assume that some of the patients who were operated immediately would have died as a result of the continued hemorrhage, as was the case in the two cases cited above. On the other hand, it is difficult to prove this contention. I feel, however, that as long as we are unable to foretell in any given case how soon the hemorrhage may prove fatal, it is our duty to operate as soon as possible in the greatest number of instances. I do not believe that we are justified in delaying operative treatment, except, possibly, in patients who are apparently recovering from shock, and in whom the bleeding most likely has ceased. Those cases ought to be given a chance further to recuperate before an operation is undertaken. There is no immediate danger of hemorrhage in such cases, for when the bleeding has once stopped, it does not recur within twenty-four hours.

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The most striking feature of this series of cases is that twelve patients were operated for repeated ectopic pregnancy, an unusually large percentage. It is difficult to gather complete statistics on this very important question, because the population in metropolitan cities is shifting and, therefore, it is impossible to follow closely the subsequent histories of the patients. Were it possible to make an actual study of the frequency of the recurrence of ectopic pregnancy, we would be in a better position to decide how to deal with the other tube during the operation of the first ectopic pregnancy.

An analysis of the cases in this series shows that nearly 90 per cent. of them were not diagnosticated until rupture had taken place. The patients began to show evidence of shock. It is interesting to note that in forty patients the diagnosis of incomplete abortion was made by the family physician, and these patients were subjected to curettage. Two patients were curetted twice, one in a period of three weeks; the other was recuretted at the end of ten days.

The diagnosis of tubal pregnancy before rupture takes place is difficult. There are not enough definite symptoms to warrant a positive diagnosis. The patient usually does not come to the physician because of the pain in the abdomen, but because of the irregular bleeding, and this latter they very often mistake for delayed menstruation. It is only when the bleeding becomes irregular and prolonged that they seek the advice of a physician. Very often these patients give a history of an attempt at a criminal abortion. The physician attributes the irregular bleeding to retained secundines, and curettage is therefore advised and performed. There were nine such patients in this series. Four patients died, one on the third day from uremia, two from sepsis. In one of the latter a criminal abortion was performed; the uterus was curetted, and the patient became septic. One died two hours later; she did not rally from the shock.

A study of the signs and symptoms of this series discloses nothing unusual. All the symptoms which are usually associated with extrauterine pregnancy, as they may be traced back in patients who are admitted to the hospital for this condition, were present. In hospital practice the problem is not one of diagnosis, for the majority of the patients are brought by the ambulance either in shock, or with a history of having had severe pain and fainting spells on one, two, or more occasions. A definite mass was made out in but a few cases. It is rather hard to outline an ectopic mass, unless the pregnancy has advanced beyond six weeks. Usually there was some fullness or bulging in either the right or left culdesac.

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The patients are usually so tender and rigid that it is difficult to make a thorough examination. We must rely on the symptom-complex presented by the patient, not upon any one or two characteristic signs.

In this series, the youngest patient was nineteen, the oldest forty-one years.

Between 20 and 25	19 cases
Between 25 and 30	27 cases
Between 30 and 35	28 cases
Between 35 and 40	21 cases
Between 40 and over	4 cases

The number of previous children was stated in eighty-four patients.

Never pregnant	17 cases
Para-i	22 cases
Para-ii	16 cases
Para-iii	10 cases
Para-iv	9 cases
Para-v	5 cases
Para-vi	1 case
Para-vii	1 case
Para-viii	2 cases
Para-ix	1 case

The last pregnancy was stated in forty-five cases.

Six months	1 case
One year	12 cases
Three years	7 cases
Four years	4 cases
Five years	7 cases
Six years	3 cases
Seven years	1 case
Eight years	1 case
Ten years	1 case
Twelve years	4 cases
Thirteen years	2 cases
Sixteen years	2 cases

The last menstrual period was stated in seventy-five cases.

One week	1 case
Two weeks	5 cases
Three weeks	7 cases
Four weeks	7 cases
Five weeks	5 cases
Six weeks	9 cases
Seven weeks	8 cases
Eight weeks	15 cases
Nine weeks	6 cases

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Ten weeks	4 cases
Eleven weeks	2 cases
Twelve weeks	5 cases
One year (nursing baby)	1 case

Except for amenorrhea, few of the patients suspected that they were pregnant. Most of them skipped a period and thereafter bled irregularly. A number of them never ceased bleeding after the irregular menstruation.

Recently, Richard R. Smith, and M. Rabinowitz have presented complete studies on the subject of repeated ectopic gestation, also adding their own experiences. Smith not only reviewed the recorded cases, but also communicated with a number of gynecologists of wide experience. His report is based on an analysis of 2998 cases in which there were 113 cases of recurrent ectopic pregnancy, or 3.8 per cent. I believe that the percentage would be greater were it possible to trace the subsequent histories of a large number of patients who suffered from extrauterine pregnancy.

The histories of the patients who suffered from repeated extrauterine pregnancy are as follows:

CASE I.—Hospital No. 25085, Mrs. P. S., thirty-eight years old. Referred by Dr. Fried. Family history, negative. Menstruation began at thirteen, twenty-eight-day type, two to three days. No pain, married seventeen years, two children, one fifteen years old, the last one a year old. Was operated for ectopic pregnancy eight years ago. *Present History:* Four months ago patient skipped one period. Had slight pain, and occasional hemorrhages. Bled profusely at her regular menstrual period. Vaginal examination disclosed a mass in the right culdesac. When the abdomen was opened, a pregnant mass was found in the right tube, and also free blood in the peritoneal cavity.

CASE II.—Hospital No. 35623, Mrs. L. E. Referred by Dr. Goldberg. Admitted December 16, 1911. Aged forty years. Menstrual history began at thirteen, menstruated every four weeks for three to four days. No pain. Married twenty-three years ago, and has seven living children; one miscarriage in her early married life. Was operated two years ago in this hospital for left ectopic gestation. Menstruated last three weeks ago. Several days later she began to have general abdominal cramps, pain localized in the right iliac fossa. Operation December 18, 1911. Right tube was found ruptured, and abdominal cavity filled with clots.

CASE III.—Hospital No. 42265, Mrs. S. S. Referred by Dr. Lachowski. Admitted Sept. 30, 1913. Aged thirty-two years. Menstrual history, normal. Married thirteen years; one child twelve years old. Second pregnancy resulted in a ruptured ectopic pregnancy six and a half years ago. Last period June 26, 1913. Two days previous to her admission to the hospital, she began to

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bleed profusely, and half an hour later began to have sharp pains in the lower part of the abdomen. Was well the next day. The following night she had another attack of abdominal pain and felt like fainting. When the abdomen was opened, the right tube was found distended with blood and partly ruptured, and blood in the abdominal cavity.

CASE IV.—Hospital No. 43628. Mrs. B. K., aged twenty-nine years. Admitted Jan. 5, 1914. Applied for admission because of nausea and vomiting of pregnancy. Was operated on for ectopic pregnancy in this hospital one year ago. *Present History:* Menstruated last Oct. 13th. Six weeks later she began to stain. Was curetted on Dec. 14, 1913. Eleven days later she began to spot again; bleeding was accompanied by cramps. On operation a four months' fetus and placenta were found in the lumen of the tube.

CASE V.—Hospital No. 45929. Mrs. A. B., thirty-four years old. Referred by Dr. Rosenthal. Admitted June 29, 1914. Menstrual history, normal. Married seventeen years. Had one child sixteen years ago; no miscarriages. Had typhoid nine years ago. Was operated at this hospital for unruptured ectopic pregnancy two years ago. Last period March 22d. Was perfectly well for seven weeks. Did not think she was pregnant. Began to bleed May 11th, but had no pain until May 29th, when she began to have sharp abdominal pains, having fainting spells and vomiting occasionally. Remained in bed for ten days. Has had severe pain during defecation. Operated July 2, 1914. Left tube found large, soft and distended, partly ruptured. The abdominal cavity contained many blood clots.

CASE VI.—Hospital No. 46610. Mrs. L. R., admitted August 17, 1914. Menstruation began at twelve; always irregular and painful. Married eleven years ago; no children; one miscarriage. Was operated eight years ago for right ruptured ectopic pregnancy. She was curetted two years ago. Menstruated last June 22d. On July 6th she began to spot and later began to bleed profusely, at the same time having cramp-like pains in the lower portion of the abdomen. Never fainted. Operated August 18, 1914. Left tube greatly enlarged and surrounded by blood clots.

CASE VII.—Hospital No. 48870. Mrs. L. S., aged thirty-six. Referred by Dr. Harwich. Para-vi, was operated on one year ago for ruptured ectopic pregnancy. Five years ago an ovarian cyst was removed from the same side. For the last two months she had cramp-like pains in the abdomen; fainted twice. On operation right tube was found ruptured.

CASE VIII.—Hospital 49399. Mrs. E. L., aged twenty-six. Referred by Dr. Schnapper. Was operated for ruptured ectopic pregnancy two years ago. Menstruated last six weeks ago, and since then she had been bleeding and spotting. Two weeks before admission to the hospital, she had sudden severe cramps in the abdomen and fainted. She had a similar attack on the day of her admission. On operation the left tube was found to be ruptured and the ovary large and cystic.

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CASE IX.—Hospital 51071. Mrs. J. B., aged twenty-three. Referred by Dr. Smiley. Married two years. Had one abortion; Operated on for ruptured ectopic eight months ago. Brought into the hospital with typical symptoms and signs of ruptured ectopic pregnancy. On operation left tube was found ruptured; the abdominal cavity was full of blood. A small fibroid tumor was found in the fundus of the uterus, which was removed.

CASE X.—Hospital No. 51986. Mrs. R. S., aged twenty-four years. Had ruptured ectopic pregnancy one year ago. Three weeks prior to her admission to the hosiptal she began to have pain in the abdomen, which localized itself in the right iliac region. Never fainted, but vomited on several occasions. Operation by Dr. Roth. Right tube was found to be swollen and distended, partly ruptured. Old blood clots were found in the peritoneal cavity.

CASE XI.—Hospital No. 59684. Mrs. F. F., aged twenty-three years. Referred by Dr. Kling. Married four years; no children; two miscarriages, one eighteen months ago. One year ago she was operated for a right tubal pregnancy. Menstruated last five weeks ago. Two days before her admission to the hospital she began to stain but had no pains. One week later she began to have a dull steady pain in the left side. She vomited frequently and felt faint. On operation left extrauterine pregnancy was found and a great deal of free blood in the abdominal cavity.

CASE XII.—Hospital No. 57551. Mrs. R. G., aged twenty-two years. Married three years. Was operated on for ectopic pregnancy two and a half years ago. Eight months later she returned, and upon examination I found her about three months pregnant. I again examined her in the sixth month of pregnancy and found her condition normal. In the seventh month she had a severe attack of sharp pain in the abdomen. A neighboring physician was called in and he gave her some morphine hypodermatically. The following day she felt better, but she did not feel any fetal movements. During the eighth month she came to New York from Bridgeport to consult me about her condition. On examination she presented the clinical picture of a woman who is in the eighth month of her pregnancy. She suffered no pain or tenderness anywhere. Fetal heart sounds could not be elicted after a most thorough examination. I then informed her that the fetus was most likely dead, and that she should wait ten to fourteen days, and if labor did not set in, it should be induced. Ten days passed there were no signs of labor and, according to her history, the fetus had been dead for nearly a month. I had her admitted to the Lebanon Hospital for induction of labor. After the usual preparation, I inserted a large catheter into the uterus and packed the cervix with gauze, but labor failed to set in. I removed the catheter and packing at the end of twenty-four hours, gave her a rest for twenty-four hours, and reintroduced a catheter and packing of the cervix, but labor still failed to set in. At the end of twenty-four hours the catheter and packing were removed and under a general anesthetic a No. 2 Barnes was introduced. This was later followed by two doses of pituitrin. She had some slight pain in the

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abdomen, but labor did not ensue. The bag was expelled at the end of eighteen hours, and the patient apparently felt well. I did not wish to suggest a major surgical operation at that time, so I advised the patient to go home and return to the hospital in about ten days. She remained at home two weeks, during which time I saw her twice. She was readmitted to the hospital after she was convinced that labor would not set in of its own accord. She was again prepared for induction of labor. At this time I informed the family that labor could not be induced because the child might have escaped from the uterus at the time she was taken ill in the seventh month of pregnancy, and when she ceased to feel the fetal movements. In order to reassure myself on that point, I thought it advisable to examine her under a general anesthetic, to dilate the cervix, in order to make a digital exploration of the uterine cavity. When I attempted to dilate the cervix a great deal of bleeding was encountered. The cervix was quickly packed and the patient returned to bed. Two days later I decided upon an abdominal operation.

When the abdomen was opened a large amount of fluid escaped and a fully developed fetus, weighing about 6 pounds, was found floating in the abdominal cavity. The placenta, hard, dry, pale and shriveled, was found to be attached in the region of the right kidney. There was no evidence of fetal membranes; the abdomen was closed, and the wound drained at its lower angle. The patient made an uneventful recovery. I at one time considered this case as a spontaneous rupture of the uterus during the seventh month of pregnancy, but after a careful study of the case I came to the conclusion that this patient must have had a tubal abortion, followed by a secondary abdominal pregnancy.

Repeated ectopic pregnancies are more frequent than is generally supposed. While we all must admit that conservation of the other tube is necessary in women who are operated on for ectopic pregnancy, and who have had no children, however, I feel that patients suffering from ectopic pregnancy, who have had three or more children, should be explained the danger of a repeated ectopic pregnancy, and with their consent the tube on the other side should either be ligated or resected.

DISCUSSION.

DR. A. B. MILLER, Syracuse, N. Y.—I have operated on quite a number of these cases as soon as they came under my observation, a thing I would not do at the present time under all circumstances. I operated on nearly 100 cases, and my mortality was *nil* until I reached ninety, then I had two deaths following each other, associated with complications outside the ectopic, toxic conditions which would produce fatalities regardless of interference with ectopic gestation. I am glad that a man like Dr. Rongy, who has an opportunity of drawing conclusions, feels that in the great majority of cases coming under observation, the condition of shock from immediate operation has very little to do in producing fatality, be-

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cause subsequent treatment with the use of salines and transfusion, even if these women seem to be practically pulseless, will bring them back, and the majority of them do recover. Of course, with our more conservative methods of surgery and experience, we find there are many cases of ectopic gestation that come under our observation, where hemorrhage has taken place before they are reached and the patient's condition has improved. These cases do not demand immediate operation; but instead of waiting to find out whether it is one of the fatal forms of ectopic gestation, and permitting them to die under observation, I think the mortality would be less if surgical intervention was resorted to.

DR. JOSEPH H. BRANHAM, Baltimore.—I have had about the same number of ectopic pregnancies as Dr. Miller, and I have had the same number of deaths. In my two cases the deaths occurred from delayed operation. These patients were not brought to me until in one case two weeks had elapsed from the time of rupture of the tube and in the other about ten days. Considerable hemorrhage had taken place, and these women became thoroughly septic before operation through the decomposition of the blood. They died from this septic condition which was caused by delay.

What I want to call the attention of the Association to, is a very simple thing. I suppose other men have tried it but I do not believe any one spoke of it. I was called to come in haste to a consultation on a woman who had all of the symptoms of extrauterine pregnancy, but had evidently bled about her limit. This woman was entirely pulseless and had all the symptoms of extreme internal hemorrhage. She had to be taken to the hospital where she could be operated on. I put a large pad over the abdomen which was lax and bound it up very tightly. I put on external pressure to such an extent that it would exert pressure in the open vessel and stop the hemorrhage. The woman recovered sufficiently to have a successful operation done. Putting such pressure over the abdomen in these cases while getting ready for operation is advisable and I do not believe that it ought to be delayed longer than to stop the probable immediate hemorrhage by some method of this kind and get the patient to a suitable place for operation.

DR. G. VAN AMBER BROWN, Detroit.—While at the Johns Hopkins Hospital some years ago with Dr. Kelly, I saw him remove from the abdomen, a large, full-term fetus, and in reply to a question Kelly laid down this rule, that if the fetus had recently died, there would be considerable hemorrhage in removing the placenta, and the case should be absolutely left alone and drained. If the fetus had been dead for some time, you can remove the placenta quite safely.

I have had some few cases of extrauterine pregnancy and I presume I had one experience which no other man has had, namely, in one morning three successive cases of extrauterine pregnancy. The first case was one of rupture in which the diagnosis was clear. A second case came to the operating room, and after the patient was under the anesthetic I made up my mind I did not know what was the matter, and that I had better study the patient further so

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she was returned to the ward. In the third case we had no suspicion of extrauterine pregnancy. The first and third cases that were operated upon got along nicely.

It is the second case that I wish to describe more in detail. After I left the operating room one of the interns, a big forceful, rough sort of individual, took it upon himself to examine this woman, and while I was operating on the third case the message was brought to me that the other patient was in a bad condition and that I should come to the ward as soon as possible. I was surprised to find that it was not the woman I had operated on first, but the woman whom this intern had examined and sent back to the ward. She was dead. We found a rupture with an eleven weeks' fetus free in the abdomen. That woman died, the result of a rough bimanual examination, within an hour.

About ten or twelve years ago I assisted in an operation on a left tubal pregnancy. Two weeks later that woman had to be operated again for an extrauterine pregnancy of the other side which existed at time of first operation, showing the importance of examining both tubes.

This summer, while operating on a patient in shock, with the abdomen full of blood and not in good condition, I felt I should examine the other tube and found that the woman was pregnant in the other tube.

As to the treatment, it seems to me there are cases in extreme shock which should not be operated forthwith, and I believe that we have a good lesson taught in the report of the 227 cases in extreme shock treated by Dr. Polak. He lost four cases. One died of accidental hemorrhage and three from septic peritonitis. His treatment is first to put the patient in the extreme Trendelenburg posture and next to give small doses of morphine, count the pulse every fifteen minutes, watch and see if it is improving. Do not give salines or stimulants. Then when the pulse has come down to 120, and the pulse pressure is 115, the patient is in fairly good condition for operation. Do not manipulate the abdominal organs too much; just take out large clots of blood and put in a quart of normal saline solution. With that method he has saved 223 out of 227 cases.

Dr. J. Henry Carstens, Detroit.—It seems to me, the following lesson is taught by the paper: when you have a case of extrauterine pregnancy the other tube ought to be removed and the woman sterilized. A good deal depends upon the case, however, and if a woman has had children before, there is excuse for it. If I have a case of extrauterine pregnancy to deal with and the woman is anxious to have children, I would not say every case ought to have the two tubes removed.

So far as operating in profound shock is concerned, we must judge each case individually; at the same time, I did operate in profound shock and thought the woman was dead when I operated. All I did was to put on a clamp, stop the hemorrhage, left the instrument sticking out and delivered the woman the next day.

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DR. RONGY (closing).—The reason for bringing this report before the Association is not so much for the purpose of bringing out a discussion on the immediate or deferred operations for ectopic gestation, but to take the opportunity of reporting the cases of repeated ectopic pregnancies and in this way collect a large number so that we shall be able to decide how to treat the tube on the other side.

I believe that the majority of surgeons do not delay to operate in cases of ectopic pregnancy.

Referring to the question raised by Dr. Ill as to instrumental interference, I wish to state that three of our cases were brought into the hospital in shock and collapse because of an attempted curettage at their homes by family physicians. In other words, as soon as the doctor began to pull upon the uterus the patient complained of pain and collapsed while on the table.

What to do with the placenta in cases of advanced secondary abdominal pregnancy is always a problem. In the case above cited the placenta was dry, hard and shrivelled and therefore it did not bleed. In other cases which were operated my rule has been as follows: When the placenta is attached to a flat surface, like some part of the pelvic cavity, I remove the placenta and pack the space occupied by it very tightly. When the placenta is attached to coils of the small intestines or to a portion of the large intestines, my rule is to leave the placenta alone, hoping that it will gradually slough away.

I believe Dr. Carstens misunderstood me. I said that in those women who have had three or more children, the question of removal or resection of the other tube should be considered. I do not believe that it ought to be done in a woman who has never had any children.

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SHOULD THE UTERUS BE REMOVED WHEN IT BECOMES IMPERATIVE TO INTERRUPT PREGNANCY?

BY

EMERY MARVEL, M. D., F. A. C. S.,

Atlantic City, New Jersey.

INTERRUPTION of pregnancy is justified only when maternal life is seriously jeopardized by the further progress of gestation. In determining the method by which pregnancy is to be interrupted, the surgeon needs to consider particularly the welfare of the woman. Fetal life is so dependent upon the maternal health that, when maternal forces are so affected as to indicate the termination of the process of pregnancy, it is likely that the death of the fetus has already occurred. It is not sufficient to take into consideration only the immediate hazard which involves the woman, but it is also incumbent upon the surgeon to consider her future well-being, and to protect her against exposure to similar danger.

The clinical manifestations which call for these considerations are: serious renal disease, retinal hemorrhage, pernicious vomiting, active tuberculosis, decompensating heart, eclampsia, and diabetes. In each of these conditions the surgeon is confronted by the consideration of what is the preferable means to obtain immediate relief from the impending danger; and there is also imposed upon him the responsibility of providing such means as will protect the patient against recurrence of the trouble.

It is evident that, though fortune favors recovery from the first trial, the woman's vitality is not only too impaired to meet a second test, but she is more susceptible to the next hazard. Unfortunately, instead of one attack immunizing against recurrence, it is too evident that the influence of the first provides greater susceptibility to the evils of subsequent dangers of the same origin. One having suffered retinal hemorrhage, occasioned by pregnancy, is destined to more severe ocular involvement in a subsequent pregnancy. A decompensating heart, having weathered the storm of the first pregnancy, would be less able to meet the demand of a second gestation. The surgeon, therefore, should endeavor to have the woman protected against the possibility of such recurrences.

Hysterectomy not only promises immediate relief, but it also

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provides protection against the recurrence of childbearing. Hysterectomy is performed with less risk to the patient than other surgical methods ordinarily employed to terminate pregnancy. The removal of the uterus renders conception impossible. Hysterectomy can be done easily and quickly, with little loss of blood during the operation, and definitely provides against loss of blood thereafter. Hysterectomy is a definite surgical procedure, and secures a more satisfactory result than other operative measures.

Those who are of the conviction that the chorionic villi develop elements which, set free into the circulation, produce toxemia, can appreciate the possibility that the uterine tissue is surcharged with this deleterious element. Merely to remove the product of conception, and permit the uterus to remain under such conditions, is to leave within the body of the patient a quantity of the pernicious element that ought to have been taken away. It is clearly evident that a hysterectomy better favors the recovery of patients suffering from toxemia than any of the other surgical procedures which do not include the removal of a uterus saturated with toxic material. I am convinced that the woman upon whom a Cesarean section is performed to relieve her of eclampsia, will have a better chance for recovery if the uterus be extirpated at the same time.

The function of menstruation involves certain losses to the organism which it is well to conserve. One of these is the monthly loss of blood; it is especially desirable that this blood should be conserved in cases suffering from active tuberculosis. Hysterectomy provides against this periodic loss of blood.

The normal sexual life, which is essential to the happiness of the married relations, deserves consideration. Hysterectomy, without removal of the ovaries, does not impair the sexual desire, and it does not prevent the continuance of sexual intercourse. The latter may be practised with liberal indulgence, without fear of conception, and without the mental anguish that such apprehension imposes upon the woman.

The query proposed by the subject under discussion should be answered in the affirmative and hold good as a working rule. This is justified, I feel, in that the removal of the uterus definitely removes the possibility of conception; it favors the patient's recovery; it does not interfere with the continuance of sexual life, and it completely disposes of all apprehensions as to the consequences that might arise were a pregnancy still possible. There is little risk to the patient in a hysterectomy done under the circumstances indicated above.

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A FURTHER STUDY OF THE USE OF CHLOROFORM IN LABOR.

BY

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MANY drugs which are used with benefit in certain doses will produce toxic effects in larger doses. We are all aware that strychnine in quantity many times greater than is needed for therapeutic effect will cause death. Witnessing the convulsions and tetany of a dog injected with a large dose of strychnine in a laboratory of pharmacology we, as students, demonstrated the results of poisonous doses. Yet the memory of these symptoms of poisoning has not prevented us from using the drug in medicinal doses for the therapeutic effect. Clinical experience satisfies us with the safety of such administration, and we do not call up as relevant the memory of the symptoms in dogs subjected to overdosage.

A number of laboratory workers have made experiments on animals with chloroform inhalation. Pathological changes in the liver and other organs have been found at autopsy following this administration in excessive quantity, in dosage many times greater in proportion to body weight than is used in the practice of obstetrics. Yet in spite of the clinical experience, based on hundreds of thousands of cases, we find that obstetricians were overawed by the report of these experimental results of relatively overwhelming dosage on laboratory animals, and that many of them were ready to abandon the anesthetic on these laboratory findings alone.

In June of last year I reported to the American Medical Association the results of my animal experimentation and clinical experience, as well as an exhaustive study of medical literature, and came to the conclusion that there was no analogy between such experimental work as has been done on animals and the careful administration of therapeutic doses of chloroform in labor. I had been surprised at the tendency of obstetricians to discredit the use of the anesthetic that had been most useful in their practice, not on the evidence of what had occurred in obstetrics, but what had been found at times in deep surgical anesthesia and what was reported from animal experimentation. It would be reactionary and contrary to the

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purpose of scientific advancement to ignore the evidence of the laboratory. It seemed only practical, however, to study the reasons for the apparent discrepancy between obstetrical experience and laboratory findings and also between the use of this narcotic in labor and in general anesthesia.

About this same time Morley, of Detroit, had independently studied this question from the same viewpoint and had refused to be convinced that what he saw in obstetrics was wrong because of what he heard of animal experimentation. He analyzed the report of one of the experiments of Whipple and Sperry on chloroform poisoning, as follows: "A dog weighing 224 ounces was given 2.25 ounces of chloroform for four hours. The amount of chloroform was 1/100 of the body weight. In this same proportion, if an obstetrical patient weighing 150 pounds were given chloroform in the same proportion of her body weight, she would receive 1½ pounds of chloroform in four hours or in the same period of time. She would no doubt have late chloroform poisoning if she could be made to live that long."

There is nothing wrong with the animal experiments made by the pathologists. It definitely and conclusively shows central necrosis of the liver cells and changes in other organs as a result of chloroform. But it has no bearing on the chloroform analgesia in labor any more than has the poisoning of dogs with strychnine to the medical use of the drug. You cannot imitate the ideal chloroform analgesia of the woman in labor, in animal experiments. I endeavored to do this in a series of experiments on dogs and guinea-pigs. Using quantities of chloroform that were absurdly overwhelming when compared to the quantity used to obtain a delightful analgesia in a woman in labor, there was no similar state in the animal. The chloroform analgesia of labor is largely a psychic condition. The woman experiences relief from an agonizing pain from a few drops of chloroform. After the first successful application during a pain, with each succeeding pain she has the physical effect of the chloroform plus the suggestion of relief derived from the first experience. For this reason, I always give enough chloroform during the first few pains to actually dull the pain and subsequently use less, depending in part on the suggestive effect. In this way a condition of comfort and quietude is obtained on astonishingly small doses of chloroform.

Take a guinea-pig, not strapped down, but resting comfortably and every few minutes for four hours let it smell 1/30 of a drop of chloroform; it will not have any analgesia, and its psychic state will probably be only one of mild wonder at your performance.

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But the amount of chloroform is comparable to that used for a woman in obstetrical analgesia and the guinea-pig's liver would remain quite normal. Our animal experimenters do not use such dosage in producing artificial liver necrosis. They say "just enough chloroform to produce narcosis." In my own experiments the least quantity with which I could obtain any semblance of narcosis was 112 drops during four hours for a half-pound guinea-pig, the equivalent of 30,000 drops for an average-sized woman; that is $3\frac{3}{4}$ pints. It is sixty times as much as I have used to procure a perfect analgesia during the painful three and one-half hours of labor in a neurotic primipara, including a short period of complete anesthesia during the expulsion.

One of the exponents of another anesthesia in referring to my comments on the experiments on animals inferred that I claimed that the element of shock to these struggling and frightened animals played a part in the destructive changes. He argued that the same state of shock and fear existed in animals subjected to other anesthetics which did not show internal changes to the same extent.

I do not contend that shock is a potent factor. I described the struggling of the terrified animals to show how unlike the quieting effect of analgesic doses of chloroform to a parturient are the effects produced on animals to whom the narcosis is administered in experiments.

You do not produce a benign happy semisomnolence in the laboratory animal. You irritate and excite it until you stupefy it with the narcosis, and, therefore, you never produce experimentally the conditions existing in the woman in labor. She is relieved from the anguish of labor pains and made quiet because the cause of her restlessness is removed. The animal is made restless and resistant and to narcotize it you must use quantities of the anesthetic so out of proportion to what is used in labor that there is no reason to consider the one as having any relation to the other.

Very evidently then, if we are to abandon chloroform in midwifery, it must not be on the evidence of its effect on animals given in a way that has no resemblance to its use in midwifery.

But the objection to chloroform in obstetrics is based on other grounds also. There are also clinical reports of late poisoning from chloroform. Almost exclusively, however, these cases are taken from general surgery. For over fifty years this question of remote toxic effects has been before the profession, and in all

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that time hardly a case is reported in obstetrics in spite of the millions of times it has been used and the thousands of times it has been misused.

A few cases have been noted where there were complications in kidney or liver disease or preexisting sepsis.

It must be kept in mind that in the course of an obstetrical case, complications may arise which demand a prolonged deep surgical anesthesia. The situation is then one of surgical anesthesia, and the choice of anesthetic must be made on the same principles that guide one in any surgical operation. For surgical narcosis, at least in America, we are agreed that chloroform is not the safest nor most desirable except in certain cases. For obstetrical surgery, just as for any other operative work, we would usually prefer ether. This has nothing to do with the obstetrical analgesia of which I am speaking and for which I consider chloroform most useful.

The idea which we are seeking is freedom from suffering without endangering the patient or interfering with the progress of labor. Armed with chloroform and with intelligence in its use, the accoucheur can reach this ideal. Its use is selective as to the time we begin in each case and to what extent we continue its administration.

Twilight sleep was objectionable because once a patient was elected for it, she was put through it, though the same patient might otherwise have gone through a relatively pain-free labor in which little or no anesthetic would have been needed.

The object of obstetrical analgesia is to make labor tolerable. But our object is not alone the desire to prevent suffering. Pain beyond the psychic endurance of the patient at any stage, inhibits labor. Analgesia which dulls the pain to a degree that can be endured by the patient prevents this inhibition and aids the progress of labor. So, according to the sensibility of the patient and her stability of psychic balance, chloroform is begun in the first stage, early in the second or just before or during expulsion. At any of these periods either because of the patient's hyperesthesia and instability of psychic equilibrium, or because of obstetrical conditions creating unusual suffering, the contractions are inhibited and labor progresses more readily as soon as the agony is dulled and the psychic balance restored.

When a patient has been having a few drops with each pain the state of analgesia can be merged into anesthesia very readily with a small quantity of chloroform. This is a perfectly safe and wise procedure for managing the head on the perineum. It may also

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be employed for a few minutes where the forceps are used. When, however, a condition exists requiring any obstetrical operation in which a state of complete anesthesia is needed for a considerable period of time, the question of chloroform or ether stands as the question stands in general surgery. Ether is chosen except where there are contraindications.

For the analgesia of labor chloroform correctly used is perfect in results and absolutely safe. Other men have found great satisfaction in the use of nitrous-oxid-oxygen, and it seems that as they become skilled in its use, they obtain a satisfactory analgesia just as we do with chloroform.

It cannot be safer, however, and its exponents must not seek to establish it on the basis of experimental poisoning of animals with chloroform, nor on the use of chloroform in surgery for complete anesthesia, for neither has any bearing on the harmless chloroform analgesia of obstetrics.

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RETAINED SECUNDINES; A STUDY OF ETIOLOGICAL FACTORS.

BY

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THE prevalence of abortion is shown by Doleris who, in a series of 103,800 obstetrical cases, found 8549 abortions or 8.2 per cent. Many English and American observers estimate the proportion as 10 per cent. of all confinement cases. The following table is based upon the figures given by several observers: Brion, Commandeur, Doleris, Dorland, Ebeler, Lackner, McPherson, Sandberg, and Titus. It illustrates the tremendous importance of abortion and its consequences.

Incomplete abortions		72 per cent.
Infection	1. In incomplete abortion	45 per cent
	2. In criminal abortion	78 per cent.
Main causes	1. Criminally produced	50 to 65 per cent.
	2. Previously aborted. Out of 3609 cases	23.2 per cent.
	3. Syphilis — directly (one series)	4 per cent.
	3. Syphilis — indirectly (many authors)	Large per cent.
	4. Endometritis (one series)	10 per cent.

MORTALITY IN REPORTED CASES 9.75 TIMES GREATER THAN IN CONFINEMENT.

Abortions			Confinements		
Cases	Deaths	Per cent.	Cases	Deaths	Per cent.
2569	101	3.9	4690	22	0.4

The materials for this study were obtained from a review of the literature listed in the entire series of the *Index Medicus* from 1878 to 1917, including the available theses, books or other contributions referred to in accompanying bibliographies.

The literature reviewed was confined almost exclusively to the English, French and German languages.

In addition to the above, a careful pathological study was made of seventy sections obtained from 474 routine gynecological cases,

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which represent a classified part of the total material examined by the Department of Pathology in the University of Michigan.

The specific references in the literature concerning the causes of incomplete abortion are notably few in number and brief in discussion thereof.

The literature was consulted under the following subject headings: Obstetrics (General), with subheadings, "Pregnancy and Complications," "Diseases of Placenta," and "Abortion;" under Medical Jurisprudence, the subheading, "Criminal Abortion," contains some of the references cited. Available articles, as listed under the above headings, and bearing upon the etiology of retained secundines or the etiology of abortion, were also consulted.

A statistical study of incomplete abortion would be most definitely illuminating, but unfortunately this is impossible if we are to use data which is at all accurately compiled. The reasons herewith being inherent with the practice of abortion which is presumably criminal in 50 per cent. of instances. Boissard thinks more than two-thirds are provoked or criminal, and if both direct and indirect causes are analyzed the remaining 50 per cent. of all cases will be shown to have largely resulted from pathological changes incident to previous abortions, miscarriages, syphilis, and other infections. A definite reticence obtains in the recital of history pertaining to criminal induction of abortion, syphilis, or even to abortions occurring under the most respectable conditions.

To the foregoing may be added a large number of undiagnosticated cases, which must necessarily pass unrecorded. A large number of cases of retarded menstruation followed by profuse hemorrhage are undoubtedly instances of early abortion. It is the incomplete types which present most commonly for diagnosis and treatment.

In evidence concerning the number of undiagnosticated cases, it is pointed out that 17.29 per cent. of 474 consecutive gynecological cases during the period July 1916, to July 1917, were almost wholly unsuspected of having had abortions, yet unresolved decidua, chorion or other evidence of recent abortion gave proof of a surprising percentage of recent abortions.

The statistics available may have considerable value at several points only in establishing certain interesting relations of etiologic factors.

A full appreciation of the causative factors for incomplete abortions involves a close study of the physiological and microscopical tissue changes during early pregnancy. The main mechanical

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factors to be considered are: Impossible separation of the embryonal and maternal parts at the time of maximal expulsive effort. There may be inadequate expulsive force even after separation is complete, the entire product of conception remaining at and within the internal os (so-called missed abortion of Vermehren, if retained ten weeks and not more than thirty-one weeks).

Inherent degenerative changes may occur either in the embryo or maternal parts, and may have advanced sufficiently to bring about a separation of a portion of the fetal mass with resulting expulsion of that part as a foreign body.

The embryo in the third month is less than one-third as large or heavy as the placenta, weighing 11 grams as compared with a placental weight of 38 grams. The uterine contractile force is at this time frequently inadequate to separate more than the egg by what may be termed the first-stage expulsive efforts.

The contractions of the uterine musculature may be sufficient to separate the fetus, but not the membranes from the uterine wall, and yet not sufficient to overcome the cervical rigidity.

Malpositions, particularly retroposition, may frequently contribute to the mechanical difficulties of complete expulsion. Titus found in a series of 274 abortions 41.09 per cent. with malpositions or adherences, 30.13 per cent. being retropositions. Sandberg, quoting Martin, May, and Howitz, lists 243 cases of retrodisplacement, of which 30 per cent. ended in abortion, while in 101 cases of prolapse of the uterus, 18 ended in abortion.

It is exceedingly difficult to specifically consider the physiological, anatomical, and pathological causes of incomplete abortion. The foregoing mechanical factors are frequently inseparable from one or all of the other causes.

It is evident that each and every cause of abortion may, under certain conditions, become directly causative of the incomplete form.

There can be no question that criminal instrumentation and other provocative means, with their sequences of infection, contribute directly and remotely in causing the great majority of incomplete abortions. Titus found 82 per cent. of a series of criminal abortions at Johns Hopkins were incomplete, and 78.05 per cent. of this same series were infected, streptococcic infections occurring in 34.37 per cent. of these cases.

The decidua reflexa may be punctured from without, as in the provocative type, or become ruptured from within by pressure of the contracting uterine muscle. A partial separation of the decidua may be produced, and resulting hemorrhage will occur at the upper or

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lower pole of the placenta, or a hemorrhage may rupture through into the chorion and amnion. Death of the ovum easily results, and the consequence is premature expulsion of the ovum with retention of secundines.

The French viewpoint is expressed by Bonnaire, who says: Abortions occur *en bloc* during the first few weeks of pregnancy, while from this time forward they occur more often in 2 parts until at the fifth month abortion *en bloc* is almost unknown. Criminal abortion, occurring so often in this period and almost always in two parts, is due, at least in part, to a lack of the sense of maternity which the fetus later arouses in the woman. When in the third or fourth month there has been a preliminary opening of the ovum and the secundines are retained, Bonnaire believes rather than suspects that there has been a culpable intervention. Any factors which act to delay the normal preparation by hypertrophy and hyperplasia of the muscle elements may cause retention of the secundines. The unyielding cervix, whether from nondevelopmental or pathological changes, is also a causal factor in the retention of the products of conception.

It should be observed that hemorrhage in the upper portion of the decidua is more fatal to the ovum than one occurring near the internal os. When the placenta separates, the vessels of the decidua serotina are torn through, and the uterus is unable to contract, making what the Germans call external, mixed or concealed hemorrhage. When completely retained, it is a concealed hemorrhage.

In 1809, John Burns, Lecturer on Midwifery in Glasgow, published an interesting small book entitled, "Observations on Abortion." The following pertinent verbatim quotations are here given: "If the uterus had been filled up, as in the beginning of the third month, the vesicle never escapes first; but we have for some time a discharge of blood, accompanied or succeeded by uterine pain. Then the inferior part or short stalk of the ovum is expelled, gorged with blood and afterward the upper part equally injured. Sometimes the whole comes away at once and entire; but this is rare. As considerable contraction is now required in the uterus, the pains are pretty severe. Often the membranes give way, and the fetus escapes with the liquor amnii, while the rest of the ovum is retained for some hours or even days (in all cases the placenta is retained much longer after the expulsion of the child in abortion, than in labor at the full time), when it is expelled with coagulated blood separating and confounding its different parts or layers. At other times the fetal and maternal portions separate, and the first is expelled before the

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second, forming a very beautiful preparation. In some rare instances we find the whole ovum expelled entire, and in high preservation. After the expulsion, the hemorrhage goes off, and is succeeded by a discharge somewhat resembling the lochia. When the liquor amnii really is evacuated, sometimes a spasmodic contraction of the fibers near the cervix takes place, instead of that regular action which is necessary for expulsion; and if the whole of the liquor have not escaped, the remaining portion will be confined by the tightening of that part of the uterus round the fetus; and this contraction may endure for a very considerable time. If not interrupted it may lay the foundation of future diseases in the uterus. Abortion requires for its completion a continued flow of blood."

The embryo not infrequently exhibits a necrobiosis as the result of malnutrition. Deformation of the embryo, according to Lindsay, is mainly the result of aberrant living processes which were preceded by disease.

Mall speaks of fetal monstrosities as abnormal or pathological, those of the first group being germinal, and those of the second group acquired from external influences. Fetal monsters are said to form 2.6 per cent. of all pregnancies, and three well-formed monsters are aborted in early pregnancy for every one which goes to the end of pregnancy. The most common external cause of pathological monsters is decidual endometritis.

In an interesting study of five or six dwarf embryos Lindsay found only one with traces of a blood vascular system in the embryo and investing membranes, and in that case the existing vessels were partially obliterated.

In the period before blood-vessel formation, when nutrition is obtained by imbibition, there are marked deviations which must be explained as arising from defective lymph.

The preplacental period ends toward the close of the third week of gestation, when the vascular allantois has appeared and its vessels have penetrated all the chorionic villi, and by imbibition all the villi aid in nourishing the ovum. Toward the sixth week of pregnancy differentiation of the true placenta begins and simultaneously the chorionic villi of this area become more and more enlarged, while the nonplacental villi gradually atrophy, so that the chorion, instead of having its entire surface covered with villi, comes to have, by the fourth month, persisting villi only on the placental area. This atrophic change may not cease, but proceed through the placental area with resulting death of the fetus. The chorion may be at this period subjected to cystic degenerative changes.

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There is no sharp demarcation line between maternal and fetal structures, but their meeting zone is indicated by the hemorrhagic condition of the tissues, areas of necroses and a narrow band of fibrin (Nitabusch's fibrin band) which is not everywhere complete.

The trophoblastic cells meeting this zone obtain the embryonal nutrition by imbibition; the extravascular blood and the lymph of the zone being the available pabulum (embryotrophe of Bonnet).

The intimate union, apposition or fusion of the mucous membrane of the uterus with the outer layer of the ovum must provide for not only nutrition, but respiration and elimination. Since the union is either an apposition or a fusion, the expulsion of the decidual membrane may be complete or incomplete.

The human placenta is a placenta vera representing the highest development of its type; a development which the placenta of the anthropoid ape has not quite reached. In the phylogenetic and ontogenetic development of placenta types nutritional function is accomplished in the lowest types by the maternal blood passing in succession through maternal endothelium, connective tissue, uterine epithelium, portions of the uterine cavity, the chorionic epithelium, chorionic connective tissue, and the endothelium of the chorionic vessels. In the human, during the earliest stage of the embryo, all the maternal walls are present, but they disappear one after the other as the embryo, by means of its chorionic epithelium, penetrates farther and farther toward the maternal blood. This penetrative process may be arrested entirely or in part by different causative factors of abortion, thereby making impossible or imperfect the highest possible stage of placentation (placenta hæmochorialis), with maternal partitions all gone, and the maternal blood directly bathing the chorionic epithelium.

The two ways of food purveyal to the embryo are sometimes described as embryotrophic and hemotrophic, the first being a transfer process, and the second a direct absorption process. The products in either case are probably subjected to a digestive process before being used by the embryo. These maternal substances are partly products of secretion, partly waste products, together with extravasated maternal blood. The interdependence of the finished food product upon the maternal and embryonal organisms appears to have been very well established. Hofbauer has pointed to the similarity between intestinal and chorionic villi.

One can appreciate the difficulties which may so easily beset the all-important metabolic functions of the developing embryo in its early existence by comparing them with the metabolic exigencies

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which come from improper food and diseased intestinal epithelium. In the so-called neofetal period which lasts about two weeks, during which the placenta is being completed and its circulation developed and adapted to the fetal needs is a time when pathological circulatory changes due to failure of adaptation of either or both fetal and maternal structures to the newly formed placental circulation are likely to occur. It has been shown that external influences may cause a faulty implantation of the ovum so as to interfere with nutrition sufficiently to produce monsters. Mall concludes that under the foregoing conditions every ovum has the power to become a monster.

The more recent work upon metabolism of fetal life has led to a change of view regarding the physiological and histological changes incident to embryonic life. Murlin picturesquely asserts that the only reason why a fertilized ovum rather than an unfertilized one becomes attached to the uterine wall is that its cells are hungry and they possess the means of satisfying their hunger. It may be said the ovum never is a true body cell but is, to a large degree, an independent organism. Hatschek aptly says, "all the cells of the body stand at the service of the germ cells because in them is perpetuated their own being."

It is highly probable that a multiple enzymic production obtains in the earliest stages of the human embryo. Von Spee says of the trophodermic cells—whatever they touch undergoes solution, and Murlin continues the thought in saying—wherever the ovum happens to come in contact with the uterine mucosa after the fringe of follicle has been digested and absorbed, it there adheres and soon dissolves a depression; the depression becomes a cavity. Young has observed that often the tissue removed is greater in bulk than the chorionic mass, and the cavity extends as the trophodermic cells increase in number.

The placenta is now generally believed to represent upon the part of the maternal organism a formation for restriction of the action from the enzymes produced by the embryo. Murlin speaking from the standpoint of the general physiologist says: "the nutritive relations of mother and fetus find their explanation in the specificity of the proteins and the specificity of enzymes which lie at the basis of heredity—the reproduction of kind."

It is quite safe to conclude that the katabolic processes predominate over the anabolic during the first four months of pregnancy or until the time when the placenta is completed in all essential structures. It has been suggested that the katabolic activity of this

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period is comparable to that of cancer and is due to the more or less unrestricted proteolytic action of the trophoderm. The first few months have been well described as a contest between the new organism and the old. The chemical substances produced by the chorionic cells probably cause hyperemesis, eclampsia, etc.

In an excellent monograph published six years ago, Young, of Edinburgh, recites his observations in a study of seventy-five cases from which he made sections of the uterine mucosa. He has therefrom been able to point out some new interpretations of the uterine changes incident to pregnancy, menstruation and chorioepithelioma. He says, "the uterine mucosal stroma is composed throughout of an undifferentiated mass of soft, easily displaced protoplasm, which is especially adapted to react to certain chemical substances by actively imbibing the blood fluid. This is dependent on a change in the colloids that enhances their affinity for fluid. This passes into the protoplasm and expands the intercellular spaces. In addition the protoplasm is broken up into minute fluid-containing cavities surrounded by the displaced cell substance. These increase in size partly by expansion, which is followed by a giving way of the tissue partitions and adjacent spaces, and partly probably by an actual solution of tissue. These changes are well-marked in menstruation and pregnancy and determine, among other changes, the formation of the large edematous and blood areas and the expanded sinuses, which develop in these conditions, and similar changes are seen in the pregnant tube and in the chorioepitheliomatous uterus."

The stroma of the uterine mucosa is so constructed as to permit of a fluid accumulation at every part. The softening of the cervix and vagina is from this fluid which has been sucked into the tissues in consequence of an alteration in the colloids which increase their affinity for fluid. In case of retained secundines, the vascular changes are induced by the chorionic cell substance, which causes the vessel walls to open up and allow the escape of blood. The edemic stromal and vascular changes are observed at considerable distances from the chorionic cells, however, the maximum effect is found nearest these cells, and particularly along the track of the veins. The bleeding is often derived from the mucosa at a distance from the villous remains, as well as from vessels in immediate proximity. To study the hemorrhages of the uterine wall during the pregnant state, one should observe that the mucosal stroma is like the mesodermic tissue of the developing embryo.

The plan of distribution of arterial blood-vessels, which are con-

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tinuations of the ovarian and uterine arteries, to the uterine mucosal wall, is by a winding course from the muscle wall to the surface. Arterial twigs are often seen surrounding the glands. In many places small branches of arteries lie immediately in contact with the epithelial cells of the glands, and when the vessels are distended this appearance is brought out more clearly and under these circumstances seems to be more numerous in the neighborhood of the glands than in the surrounding stroma. When in pregnancy the mucosa is thickened, the vessels are drawn out perfectly straight.

Young points out that the blood-vessels lack differentiation, for they consist in their entirety of ordinary stroma cells which, if altered at all, are simply altered as tracks or channels through the soft stroma protoplasm, by means of which a rich supply of blood is carried to every part of the mucous membrane. The uterine vessel walls, almost immediately after reaching the mucosa, throw off their specialized supporting coat of muscle and elastic tissue, and during menstruation, pregnancy or chorioepithelioma, it is impossible to tell which are the original intimal cells and which the stroma cells.

During pregnancy there is an immediate and easy gaping of the vessels in the proximity of the embryo for the purposeful "give and take" of essential products. *The perfection of this mechanism and its normal operation is the crux of the entire question of abortion and whether it is complete or incomplete depends upon the nature of the intercepting pathological factors.*

The nature of the subject under discussion admits of intensive study in tissue changes and the resulting functional disturbances therefrom. It involves further an accurate statistical compilation of the relative frequency of the several factors which have produced incomplete abortion; and the difficulties attending the compilation are as previously mentioned difficult and nearly impossible. After one has passed in review the majority of these cases which belong to the so-called provocative or criminal class, there remain the classes which invite close study in the anatomical, physiological, and pathological changes incurred before determination can be made of the causative factors.

It is to be remembered that the several factors and conditions may act separately or conjointly, as in one criminal abortion becoming the primary cause of an endometritis which in turn provokes a prolonged two-stage abortion occurring one or more times. Also, it must be mentioned that the consideration of a cause such as syphilis, which doubtless acts very remotely at times, as in the

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formation of the embryo or chorion or in producing increased connective tissue changes in the uterine arterial walls, requires a most extended research.

Statistics relative to the frequency of syphilis must vary widely according to the methods of study used for its diagnosis. For example, Lackner gives 4 per cent. of syphilis as the cause of retained secundines in a series of 100 consecutive cases, and his diagnoses were based only upon positive Wassermann tests. The same author quotes Reischig as having but 0.78 per cent. of abortions in 500 luetic women, and Frinchese as saying lues plays practically no rôle in abortions during the first four months of pregnancy, but rises to 20 per cent. in the seventh month. A. S. Warthin, of whose work Sir Wm. Osler speaks as being most painstaking and thorough, believes that fully 50 per cent. of abortions are from luetic causes, and asserts that the Levaditi stain to successfully exhibit the spirochete pallida must be used upon material within a very few hours after death.

It must be said in this connection that many of the causes cited elsewhere in this paper, as producing incomplete abortion, present just as true histological pictures of syphilitic changes as can prevail during the earlier months of pregnancy. Citation of the well studied case of Watson, Wade, and Waterston which, though one of a decidual cast, might easily have been incomplete instead of complete, as indicated in the following description, viz: Patient presents a history of two full time children, followed by seven abortions at from a few weeks up to four and one-half months; hemorrhage was unusual, floodings occurred from third month onward. Histologically the conception product was separated through the spongy layer of the decidua; interglandular bridges at certain areas were torn through and consisted of necrotic tissue, the blood-vessels supplying these necrotic bridges showed marked pathological changes. In some vessels there was actual thrombosis, in others narrowing of the lumen by active proliferation of the endothelial lining and fibrous tissue cells surrounding the walls. Around these vessels and in the areas supplied by them, there is an excess of extravasated blood. The above described tissue changes are so exactly like those of syphilis that one does not hesitate to describe this case in this connection.

Of the definitely demonstrable causes which are responsible for numerous instances of retained secundines, mention has heretofore been made of malpositions of the uterus and inadequate placental sites. These causes must be applied in explanation of many varied

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circulatory changes which in turn produce local or partial tissue insufficiency, resulting in sectional dissection first, then hemorrhage, and finally death of the fetus, with ultimate delivery in two periods.

It is scarcely necessary to summarize what has been said directly and indirectly concerning the various infections, except to point out that the general pathological features are in many particulars the same whether the infection is bacillus abortus (Bang), Neisser, staphylococcus, streptococcus, or other type. The changes effected are seen in the cotyledons, uterine wall, placenta or in all these tissues. The clinical picture showing an endometritis, metritis, etc. The hypertrophy and hyperplasia resulting may serve as an immediate or remote basis for partial or complete loss of the conception products.

In conclusion, attention is again called to the part of this paper in which attention was given to the histology of the maternal and fetal tissues and their related physiology. It is to be specifically emphasized that the principles involved from whatever cause, may be essentially the same in producing the factors which determine improper enzymic production, and interaction, or produce abnormal metabolic changes which in turn lead to death of the fetus and partial expulsion of the secundines.

The writer desires to gratefully acknowledge the kindness of Dr. A. S. Warthin of the University of Michigan, in placing at his disposal seventy sections of retained secundine tissues, and also that of Mr. H. L. Clark for valuable assistance in reviewing the literature.

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DISCUSSION.

DR. ALBERT GOLDSPOHN, Chicago.—It seems to me that this paper aims to present a natural basis from the standpoint of pathological anatomy of what is likely to be the correct policy in the treatment of incomplete abortions. This subject is a disgrace to the profession now because treatment varies from one extreme to the other. We find men who are devoid of common sense and good judgment in the use of one or the other of these methods and who fail to realize that the truth is apt to lie somewhere between the two extremes. For retained secundines without infection we know what to do; but where there is infection, we are told to let it alone to nature; it will "stink" itself out. This ought to be humiliating to every one of us who claim to have any ability in the practice of our profession. On the other hand, to ignore the fact that nature is carrying on a defensive process here by infiltration, building up a wall around the offending agents, and limiting the entrance of infectious material to the general system, and to imagine that we can do better than nature, with a pernicious curette, is equally reprehensible. So the cases should be individualized and the natural processes kept clearly in view. A former teacher of mine (Moses Gunn) years ago used to say that we are hod carriers to nature. Nature is the chief factor. Can we do something in these cases that will assist nature, or are our strokes going to be as harmful as they are useful? Let this be our attitude and we will be more likely to do something that may assist nature and not hinder her. In that regard the technic of intrauterine irrigation with alcohol so efficiently demonstrated to us by Dr. Ill is a great help. I question very much the propriety of using an instrument other than a finger as a curette in a puerperal uterus and I would think twice before using a curette in septic abortion unless bleeding makes it necessary. Alcohol irrigation will do a great deal of good.

DR. HUGO O. PANTZER, Indianapolis, Indiana.—A study of retained secundines as the etiological factors which produce retention, is of unusual interest. Musing collaterally, why is it that women suffer so much more in their sexual organs than do males? If we consider that traumatism attends ovulation and menstruation, the one occurring to the ovary about midway between two menstruations, and the other to the uterus and tubes at the menstrual period, this may have a bearing upon this question. The observation is frequent that a patient takes cold and ever afterward has trouble with menstruation. It is stupid to accept the fact without delving deeper. A so-called cold often is a bacteremic disease. It may be acute or an exacerbation of a chronic infectious process pertaining to tonsils, teeth or other locality. The trauma of menstruation constitute in the ovary and endometrium, each, a locus minoris resistentiæ and their infection is therefore easily possible. A woman may suffer a slight jolt which seemingly amounts to nothing, but if attended with hemorrhage, while bacteremic disease is present, it may result in infection, that may become chronic in many cases.

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To the extent that the endometrium is liable to such infection, it may be assumed that abortion in quite a percentage of cases is due to a chronic endometritis, which is inimical to the further course of pregnancy.

DR. DAVIS (closing).—I have nothing more to say except to call attention to one or two points. The natural size of a decidual cast about the fourteenth day is quite small, as shown in Waterston's case. One appreciates how easy it is to miss the product of conception at this time, when the entire mass comes away. However, if only a part of the product is expelled, it is still more difficult. In the average criminal abortion case the decidua reflexa only is opened. It is but a very short distance through the reflexa for the instrument to pass and rupture of the ovum occurs through this relatively small opening, leaving the remainder of the product attached to the wall of the uterus.

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NOTES ON METHODS FOR OVERCOMING MECHANICAL OBSTRUCTIONS TO PREGNANCY.

BY

ROBERT T. MORRIS, M. D., F. A. C. S,

New York.

(With nine illustrations.)

ONE who goes about to various clinics will observe that surgeons are sometimes very wasteful of pelvic structures in their conscientious desire to remove all sources of discomfort for the patient. You know the old quotation, "More harm is wrought by lack of thought than any bad intention." When your Secretary asked me for a paper for this meeting, I had just received notice of pregnancy in a case in which very large interests were involved, and I had made

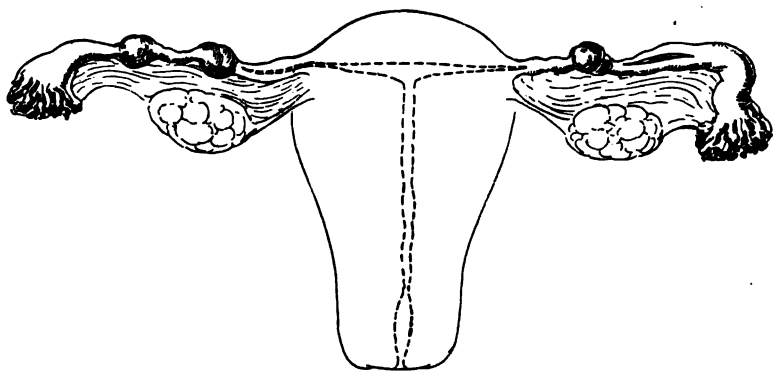

FIG. 1.

the pregnancy possible by a resource which is not ordinarily employed in all hospitals. The patient had lost one ovary from cystic degeneration and a part of the other ovary had been removed. The Fallopian tubes presented that form of arrested development which we commonly find in fibronodosum. In this particular case there were only one or two tiny fibrous nodules, but the lumina of the oviducts appeared to be closed for the most part. In a case of this sort my resource has consisted in passing a probe to one cornu of the uterus, then through an abdominal incision exposing the

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oviduct lumen at a point as near as possible to the uterine lumen. A slit is next made in the ampulla of the fimbriated end of the oviduct and the distal end of the oviduct is finally sutured to the vicinity of the opening near the cornu in such a way as to make a short-

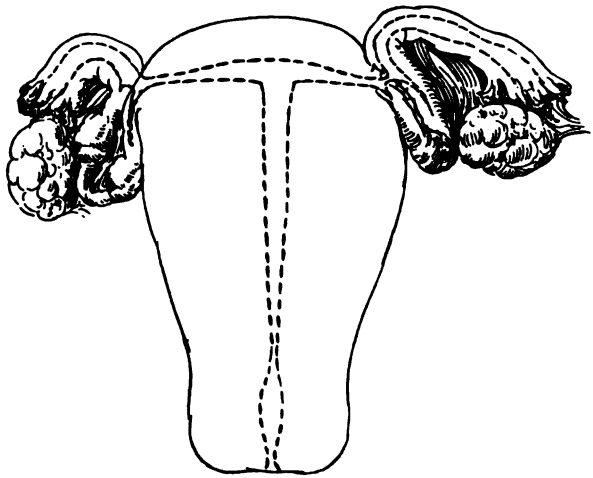

FIG. 2.

circuit past that part of the oviduct which is the seat of degenerative changes. Figs. 1 and 2 illustrate the operation.

Clubbed Oviducts.—As a result of various inflammatory processes we frequently find oviducts surrounded by adhesions, clubbed at

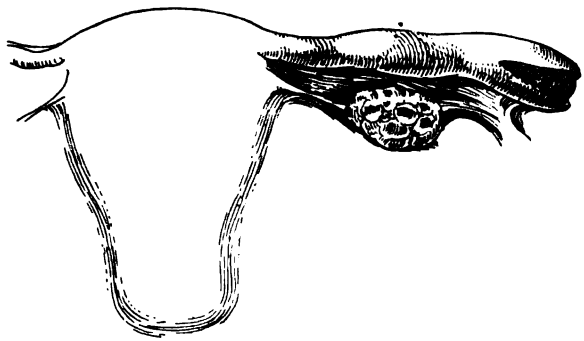

FIG. 3.

the distal end, closed and without fimbriæ inside. Judging from my observation such tubes are commonly held to be worthless and they are removed. Two resources are available if the inflammatory processes have come to a pause. Fig. 3 illustrates one of these re-

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sources. The clubbed end of the tube is split open and dusted freely with aristol. Aristol presents a mechanical obstacle to closure of the incision. This is so benign, if free from grit, that the peritoneum makes no serious effort at walling it in with plastic exudate, but it will remain in place for many months. During that time, no doubt aristol in itself presents an obstacle to the passage of ova. Eventually it is taken into solution by the fat of normal tissue cells in the course of normal physiologic retrograde metamorphosis. One

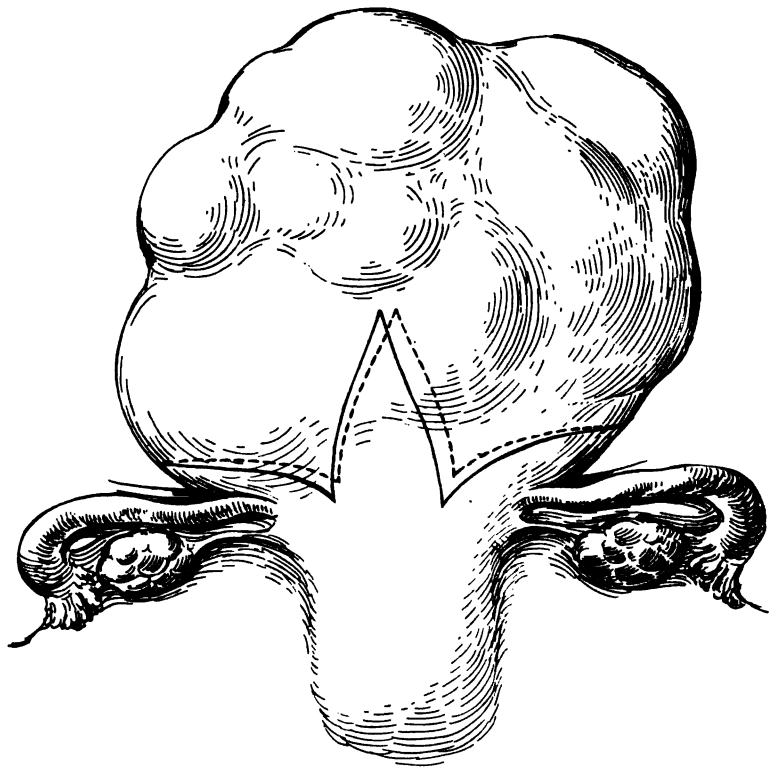

FIG. 4.

must determine if the clubbed tube is patent clear to the lumen of the uterus, and when it is not patent the resource pictured in Figs. 1 and 2 may be employed in addition. In one case in which I had occasion to reopen the abdomen for further relief of adhesions some months after the first operation, the clubbed oviduct still carrying some aristol had developed or at least released a number of short but distinct fimbriæ. I do not know how often such a reparative process might be anticipated. Much would depend upon the degree

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of damage from interstitial infiltrates at the time of the original acute inflammatory process.

"*Scrap*" *Uterus*.—In certain cases of myoma or of fibromyoma in which pregnancy is very much desired, we may sometimes con-

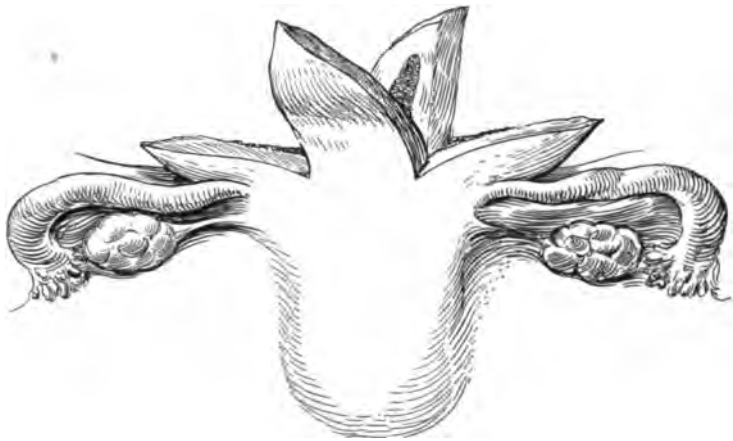

FIG. 5.

struct a uterus from scraps of tissue which remain intact. Figs. 4, 5 and 6 illustrate this. In such a case the original tendency to degenerative change remains, and we must inform the patient that

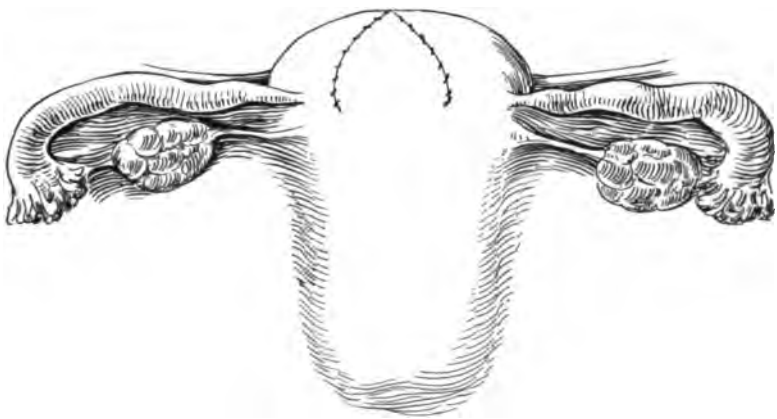

FIG. 6.

a recurrence of the neoplasm is to be anticipated. The patient must be prepared for another operation at some later date, and the operation is advised only in a case in which the securing of a child in the interval is of paramount importance. I have recently seen one

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patient for whom a scrap uterus was constructed more than three years ago and it is practically impossible to determine that the patient does not possess a normal uterus, although the fibromyoma in this case had reached halfway to the navel. As opposed to such a favorable outcome, I have recently removed a 'scrap' uterus which had undergone further myomatous degeneration to the point of making pressure complications. We may simply keep in mind the idea of employing the resource sometimes.

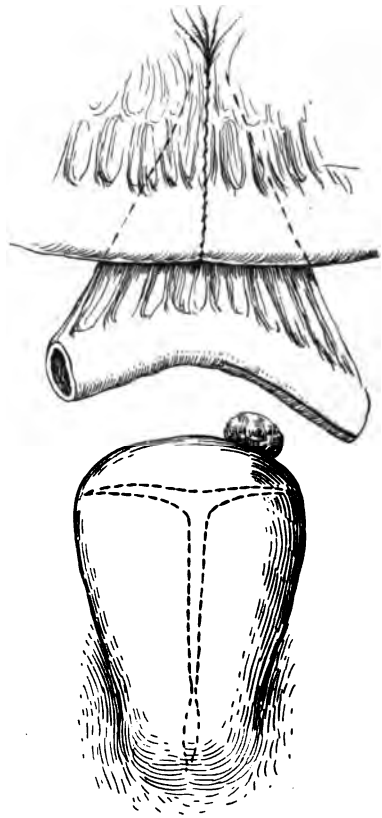

FIG. 7.

Artificial Fallopian Tubes.—Mrs. S. K., forty-two years of age, entered the Post-Graduate Hospital in October, 1916, willing to take desperate chances for securing pregnancy. Her oviducts and one ovary had been removed previously by Dr. Boldt, who had adopted at that time a conservative though rather hopeless procedure of leaving one ovary sutured to the fundus of the uterus near the stump of one

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oviduct. When an oviduct is removed the lumen of the stump is almost invariably closed by plastic exudate. In experimental work we find it practically impossible to keep such a lumen open, although a number of cases are on record in which that has occurred and pregnancy has resulted. In experimental work with animals and with human subjects I have made heteroplastic transplantation of the distal end of oviducts, but the tendency in heteroplastic transplantation is always toward absorption of the graft. In order to overcome Nature's effort at sealing in the stump of the oviduct with

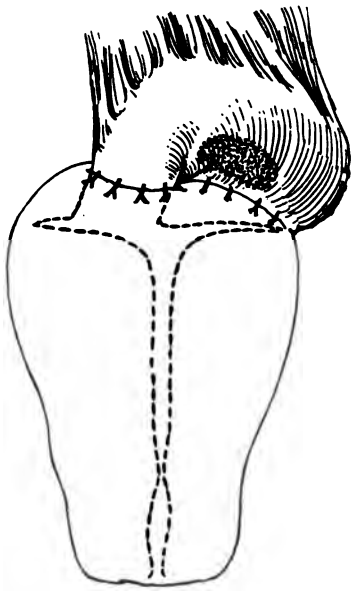

FIG. 8.

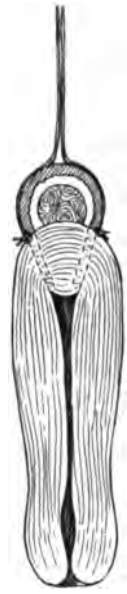

FIG. 9.

plastic exudate and of absorbing the transplanted part of the oviduct, I employed in this particular case a resource which would be desirable only under circumstances in which the patient understood fully that the work was experimental and not likely to succeed. In the case of Mrs. K. the degenerated ovary which had been conserved had undergone complete degeneration so far as I could determine at the time of operation. A heteroplastic graft consisting of about one-third of an ovary from another patient was introduced and sutured to the uterus (when making ovarian transplantation I first subject the patient furnishing the ovary to tests for syphilis and tuberculosis). A month later the abdomen was reopened in order

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to determine if the ovarian graft was undergoing the ordinary absorptive processes or if it showed a tendency to resist absorption. The graft appeared to be in such good condition that the step for constructing an artificial oviduct was taken. Figs. 7, 8, and 9 will illustrate these steps.

A 3-inch loop of ileum with mesentery attached was separated from the rest of the ileum, flushed out with formalin solution and then sutured in such a way that the ovarian graft was included in the lumen of one end of the ileal graft, while the other end of the ileal graft was led into an incision in the fundus of the uterus and sutured in such a way that the mucus secretion would continue to flow by way of the lumen of the uterus. An end-to-end anastomosis was made between the severed parts of the ileum from which the graft had been taken. I do not know that spermatozoa will be able to make their way against the flow of mucus through the uterus (considerable in degree), but we know what ambitious spermatozoa will sometimes do. Furthermore there might be danger of impregnation of an ovum before it reached the uterine lumen, and we cannot anticipate the degree to which such a graft wall would become enlarged in order to accommodate itself to an extrauterine pregnancy.

In one case I utilized the appendix vermiformis for the purpose of securing an artificial oviduct with mucus secretion. In that case the proximal end of the appendix was sutured to one cornu of the uterus—its lumen continuous with the uterine lumen. The distal end of the appendix was split open and filled with aristol for the purpose of preventing reparative closure.

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VERSION, WITH A REPORT OF TWO HUNDRED ADDITIONAL CASES SINCE SEPTEMBER, 1916.

BY

IRVING W. POTTER, M. D.,

Buffalo, N. Y.

In 1914 I became a member of this Association when it held its annual meeting in Buffalo. At the meeting in Pittsburgh, it seemed to me that there was a lack of papers upon obstetric subjects, and a great surplus of papers on surgery, for a society known principally as an obstetrical and gynecological association. When the Secretary sent out his requests for contributions to the Indianapolis meeting, the idea occurred to me that a paper on "Version" would not be out of place. Accordingly, I gave him the title of my paper, "Version, with a report of 500 cases." What happened to that paper many of those present here to-day know, and, doubtless, all have heard something of it. After a lively discussion by the members present, the Executive Committee decided to withhold its publication. The paper was returned to me with the statement, "that in due course of time I should see the error of my ways, and should be sorry ever to have written such a paper; and furthermore, that I should be exceedingly grateful to the men who had discussed the paper adversely."

To those who discussed the paper, I am grateful; but to the Executive Committee who suppressed its publication, I cannot help confessing to a sense of disappointment and disagreeable surprise.

A paper is always of value when it brings out the individuality of the writer's method of practice. My contribution was a plain report of cases of version performed by me and the results obtained with it for both mother and child. The mere fact that gentlemen were present who do not endorse my practice of version, does not make my procedure reprehensible; nor should it have been sufficient cause to bar the publication of that paper.

I did not come before the Association with text-book methods of practice, nor the methods of procedure advocated by many professors of obstetrics; I simply reported my own work, performed in the manner I deemed best because of my experience with over 6000 personally conducted confinements; and, since the presentation of my paper, instead of resorting to version less frequently, I have felt justified in expanding its sphere of usefulness. Every intelligent man finds his best teacher in his own experience.

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In the discussion of my paper of last year, it was claimed that the introduction of the hand into the uterine cavity was fraught with danger, and that it was impossible to deliver, by version, a great number of women without serious injuries to the pelvic soft parts; that the child's life was endangered when the aftercoming head could not be delivered quickly, and that the child could not be brought down by two feet as well as by one foot. These were considered the great objections in the decision against version.

I am willing to admit that, under certain circumstances, it would be dangerous to introduce the hand into the uterus, that sometimes it is impossible to deliver without tearing the pelvic soft parts, and that the aftercoming head, occasionally, causes difficulty in its delivery. But granting all of these objections, I still maintain that a properly performed version, in the hands of a competent obstetrician, is to be preferred to a difficult forceps operation. Version lessens shock by shortening the labor, it conserves the patient's strength, and does away with the injuries to the baby's head. We cannot disregard the fact that prolonged application of the forceps is followed by injurious results which are immediate, to the mother and remote to the child. Epilepsy and idiocy, etc., in the infant may be attributed to a difficult forceps delivery.

It is also claimed that chloroform anesthesia is dangerous to women in labor. Ninety per cent. of my labor cases have been chloroformed to the surgical degree without any accident or apparent danger either to mother or to child.

Some of the salient points in my paper of last year were overlooked in the discussion that followed its presentation. Permit me to call your attention to their importance once more. In the first place, the cervix must be completely dilated, or easily dilatable, before version is attempted. Deep anesthesia is best at all times. The operator should wear rubber gloves reaching to his elbow. No patient should be delivered unless the bladder is empty. Every antiseptic and aseptic precaution should be taken to render the vulva and vagina thoroughly sterile before version is attempted. Primiparity is no bar to version. Both feet should be brought down at once. No attempt should be made to deliver the arms until the scapula is outside the vulva and the anterior arm should be delivered first. The operator must remember that, in delivering the head, extreme flexion is necessary, and can be best produced by gentle traction with the finger in the child's mouth. If the head remains extended, complications always arise. After the chin and mouth are delivered, mucous will flow from the child's mouth;

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this should be promptly removed, because many children will breathe before the complete delivery of the head. Excessive pressure upon the mother's abdomen is not necessary and should be avoided because of injuries that may be done to the bladder and lower anterior uterine wall. The aftercoming head may be delivered by the use of the forceps if necessary. The operator should, in every instance, have a perfect knowledge of the attitude of the child in the uterus before version is attempted. Version can be accomplished only by introducing the hand into the fundus and by exploring the uterus and the fetal parts carefully. If the membranes have not ruptured, it is well to separate them from the uterine wall, as high up as possible, before rupture is undertaken. In this way much of the amniotic fluid is retained within the uterus, and version is more easily accomplished. When the knees of the child have been born, version is complete. Version is a procedure which should never be hurried; the operator should at all times be master of the situation. The extreme lithotomy position is not always the best for the patient when a version is performed, but it is convenient, and requires less assistance. The Walcher position gives better results because it relaxes the soft parts of the mother; but the obstetrician can obtain this relaxation only by having two assistants, or by allowing the feet of the patient to rest upon chairs. When the child is born, it is placed upon the mother's abdomen upon its right side, and is kept there until the cord is cut. I should like, at this point, to enter a protest against the too common practice of spanking or beating the child to make it breathe. This is wholly unnecessary, for all we do is to hold the baby up, with its head down to allow the mucous to run out of its mouth, and then breathe a few times upon its chest. Respiration invariably takes place. The third stage of labor can be completed by delivering the placenta manually; but I have had two experiences in which I was obliged to deliver the placenta first, and then bring down the child. In each instance the child lived.

It makes no difference whether this method is termed a premeditated version or an elective version, since the results secured are preferable to those obtained by an even moderately difficult forceps delivery.

The maternal mortality, in properly selected cases, should be *nil*. The maternal morbidity is no greater than that in normal cases, as my charts will show. In my experience the mutilation of the soft parts of the mother is less than that resulting from the use of the forceps, and the patients leave in good condition.

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The principal dangers to the child are due, first, to a prolapsed cord, partial, complete, or concealed, the last being more common than is generally supposed; and secondly, to prolonged pressure of the uterus upon the child, as in cases of faulty presentation, and in the border-line cases of contracted pelvis. The intelligent application of the forceps to the aftercoming head has greatly reduced the fetal mortality and morbidity.

Version is easier of performance where the amniotic fluid has not entirely escaped, but the operation may be readily performed in any case in which the uterus is not too firmly contracted around the child. Wherever there is still some of the liquor amnii in the uterus, it is best to introduce the forearm as far as possible, using the arm as a plug to prevent the entire escape of the fluid, until the version is accomplished. Green sterilized liquid soap I regard as the best lubricant.

From September 1, 1916, to August 31, 1917, I have delivered 515 cases, a series in which version was performed, for various reasons, 200 times. Adding these cases to the 500 cases reported last year, I now have 700 versions to my credit. Approximately 50 per cent. of the last 200 versions were hospital cases. There was no maternal mortality in this last series; and, if you remember, none in my first 500 cases of version.

Of the series of 200 versions eighty-five were performed in primipara, and 115 in multipara. Forty of these were seen in consultation with physicians, and thirteen were in the care of midwives. One hundred and twenty-six cases were left occipitoposterior positions of the vertex. Forty were of the right-occipitoposterior variety. Three times version was performed when the occiput was to the left and anterior, and five times when it was to the right and anterior. Version was performed in these cases in preference to the use of forceps. Of face presentation, mentoposterior position, there were three cases; shoulder presentation, one case; transverse presentation, one case; mentoanterior position, one case; central placenta previa, four cases in multipara with the os dilated or dilatable; lateral placenta, one case; prolapsed cord, fifteen cases, of which six were complete, and nine were of the concealed variety. In fifteen cases the cord was around the child's neck once; in six cases, twice; in one case, five times, and the child lived. In two cases the cord was tightly stretched between the legs, and had to be cut before delivery could be accomplished. Both children lived. The cord was around the neck, and between the legs, in two cases; twice around the neck and right arm, in one case; three times around the

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neck and between the legs, in one case, and short cord occurred once.

Instruments were applied to the aftercoming head, ten times. In the last series, there were three cases in which it was necessary to repair the perineum; each case required two silkworm sutures, and in each of these three cases the forceps were used on the aftercoming head. In one of these cases, a primipara, thirty-one years of age, the baby weighed 9¾ pounds; in another, a primipara, twenty-eight years old, the child weighed 9 pounds; in the third, a primipara, thirty years old, the child weighed 11 pounds. All the children were born alive.

There were sixteen stillborn children, of whom one was a hydrocephalus, requiring craniotomy on the aftercoming head. In two cases the fetus was macerated, having been dead for some time. The cause of the death was unknown. There were two stillborn children in the placenta previa cases, and one stillborn in the mento-posterior position. In this case no fetal heart sounds could be heard before the version. One stillbirth was due to short cord, and one was the result of disproportion between the child and the pelvis. This was really a case for abdominal Cesarean section. The remaining eight stillbirths were due to prolapsed cord, two of which belonged to the complete and six to the concealed variety. Ten of these sixteen stillbirths were consultation cases, six of them in the hands of midwives, and four in the care of physicians.

To safeguard maternity by reducing the maternal mortality due to pregnancy, labor, and puerperal complications, is most desirable, and any procedure tending in this direction commends itself without question. According to "American Medicine," July, 1917, a bulletin issued recently by the Children's Bureau of the Department of Labor shows that more women between the ages of fifteen and forty-five years die of puerperal causes than of any other diseases except tuberculosis. About 15,000 maternal deaths, the results of pregnancy and labor, occur annually in the United States, and these figures have shown no decrease since 1900.

I feel, therefore, that my paper has a direct bearing upon this very point and that the proper management of faulty presentations and positions, as described above, must lower the maternal mortality and morbidity. I have shown that, in my practice, I employ version more frequently than any other method of delivery, that my maternal mortality has been *nil*, my maternal morbidity less, and my fetal mortality not greater than that of other obstetricians.

In my paper of last year I recommended and reported twelve

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cases of version for pendulous abdomen. I also advocate version in cases of large varicose veins of the vulva, vagina, and thighs, because I fear hematomata in these regions, as the veins are apt to cause serious trouble when they break down and become infected.

You may think I find L. O. P. position more frequently than is usual, but this is, probably, because I make an earlier examination and a more careful one. I pay no attention to the sutures or fontanelles, as an accurate diagnosis, based upon these landmarks, is impossible because of the overlapping that always takes place. I depend upon the ear entirely, because the ear is always on the side of the head; but I am always careful in making my diagnosis, as the ear may be folded upon itself.

It is evident that I am advocating version more frequently than the present teaching of obstetrics would seem to justify, but I feel that my procedure is not more dangerous than the practice of waiting for a spontaneous labor, and I am certain that the dangers of a properly performed version have been much exaggerated in the past. Give version a wider field of application, and you shorten the duration of labor and thus lessen the dread and horrors of childbirth so universal among the mothers everywhere.

CONCLUSIONS.

Version lessens the shock of labor.

It lessens the dangers due to pressure from and on the head of the child.

Version should never be undertaken until the os is fully dilated or easily dilatable.

The majority of occipitoposterior positions are best treated by version.

Version is as readily performed in the primiparæ as in multiparæ.

The fetal mortality of version should not be as great as that of prolonged labor and instrumental delivery.

Injuries to the child's head are reduced by a properly performed version.

Face presentations are better treated by version.

Prolapsus funis, when the cervix is dilated or dilatable, and the cord is still pulsating, is best treated by version.

Placenta previa, in multiparæ with cervix dilated or dilatable, is best treated by version.

A moderately contracted pelvis, when the child is small, is best treated by version.

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THE MANAGEMENT OF LABOR IN NARROW PELVIS.

BY

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Cincinnati, Ohio.

(With four illustrations.)

Synopsis.—THE doctrine of narrow pelvis is not sufficiently understood and its therapy is practised by comparatively few. Four degrees of narrow pelvis are generally accepted. The treatment in the first and second degrees of contraction is not easily determined. Rules for treatment in the two highest grades of contraction are very simple. Points of diagnosis which must guide us in our judgment of cases and which assist us in determining the treatment to be adopted. The test of labor. Prophylactic version. The high forceps justifiable only when the head is well flexed and fixed in the pelvic brim. Craniotomy. Hebosteotomy or symphyseotomy. Abdominal Cesarean section.

One hundred and fifty years of astute and continuous observations on the part of the ablest obstetricians of the eighteenth and nineteenth centuries were required to complete the doctrine of narrow pelvis and its therapy. Deventer (1720) laid the foundation; Litzman and Michaelis (1870) completed the doctrine. Though nearly fifty years have passed, so far as the medical profession in general is concerned, the doctrine of narrow pelvis is hardly understood, and its therapy is practised by but few. This is the author's excuse for bringing the subject before you.

Four degrees of narrow pelvis are generally accepted. The first degree includes the pelvis in which the conjugata vera of the inlet is about 9 cm. in length, or above; the second degree represents all of those cases in which the conjugate measures between 9 and 7 cm.; the third degree comprises all pelves with a conjugata vera below 7 and down to 5 cm.; the fourth and highest degree of contraction consists of all cases in which the length of the conjugata vera sinks below 5 cm.

In the first degree, 9 cm. or above, labor terminates, as a rule,

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spontaneously. In the second degree, 9 to 7 cm., natural labor may still be possible, but its course is difficult and protracted, and the dangers for both mother and child increase as the contraction approaches 7 cm. In the third degree, 7 to 5 cm., labor *per vias naturales* is possible only by embryotomy. In the fourth degree, 5 cm. and below, the delivery even of a mutilated child is considered impossible.

The rules for treatment in the two highest grades are perfectly simple. When the conjugata vera is between 7 and 5 cm. in length, natural delivery is made possible only by reducing the size of the child's head. When the conjugate is below 5 cm., even the demolished skull of the fetus may not pass the narrow space at the brim. In the third degree of pelvic contraction, 7 to 5 cm., Cesarean section is *relatively* indicated because it is resorted to only in the interest of the child; in the fourth degree, 5 cm. or below, Cesarean section is positively indicated because it is the only therapy by which both lives may be saved.

Thorough familiarity with the technic of abdominal hysterotomy and a perfect surgical asepsis make the prognosis of this operation very favorable if performed shortly before or soon after the commencement of labor, before the bag of waters has ruptured, before other attempts at delivery have been made, and when the patient is free from fever. Under these conditions the operation is perfectly justifiable and one need not hesitate to resort to it for relative indications alone. When, however, labor has lasted a long time, when the amniotic fluid is completely discharged, when frequent examinations or attempts at delivery have been made, or if fever is present and infection exists, the prognosis of Cesarean section is far less favorable. As in these cases the life of the child is already more or less compromised, craniotomy is preferred in all cases falling within the third degree of narrow pelvis.

While it is true that Cesarean section has been successfully employed in some cases in which efforts to deliver the child have been resorted to, even when infection was present, under such circumstances, the maternal mortality is always high.

For the more moderate, or first degree of pelvic contraction, 9 cm. or upward, the mode of procedure is easily determined. First, the test of labor, in the great majority of cases, terminates in spontaneous delivery and a living child; if labor is very slow, the so fully dilated and the head well flexed and fixed at the inlet, the use of the forceps is justifiable (Fig. 1). This, however, should be the limit of the so-called high application of the forceps in narrow

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pelvis, and the instruments should never be applied in these cases when the head is arrested above the brim.

In the remaining or second degree of narrow pelvis, 9 to 7 cm., the problem as to which mode of delivery will give the best result for both mother and child is not so easily solved. Even in these cases labor may terminate spontaneously; but all of the obstetric operations, version, forceps, pubiotomy, craniotomy, embryotomy, and Cesarean section, may suggest themselves for earnest consideration.

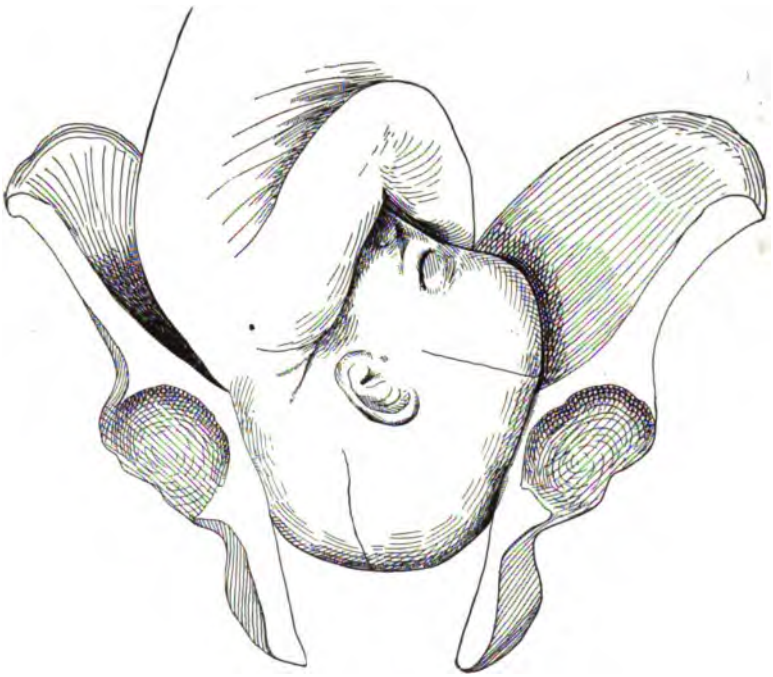

FIG. 1.—Head well flexed in moderately contracted pelvis. When arrested at this stage it is favorable to the application of the forceps.

Whether the patient may be safely subjected to the test of labor, or whether it is advisable to interfere at once, or as soon as possible, cannot be determined by the degree of pelvic contraction alone. Much will depend upon whether the presenting head is large or small, hard or easy of configuration; whether it is well flexed and its position favorable, whether the uterus contracts well, and whether or not the abdominal pressure is normal and effective. All of these conditions cannot be properly considered and determined before the membranes have ruptured; consequently, in the beginning of

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labor of all cases of moderate pelvic contraction, we must watch and wait. During this period of watchful waiting we have time to observe the manner in which the first stage of labor proceeds.

It is important to remember that in cases of narrow pelvis the bag of waters is apt to rupture prematurely. If this occurs, obliteration of the cervix and dilatation of the os are, necessarily, protracted. Not only is the entire parturient tract thus opened to admit without hindrance dangerous germs into the amniotic cavity, but the life of the child is also threatened because of the escape of the liquor amnii, long-continued contraction of the uterus over the child, and the consequent interference with the placental circulation. The longer labor lasts under such circumstances, the greater the danger of an infection and the birth of an asphyxiated child.

To keep the membranes intact as long as possible must be the first object of the attendant. The best means of securing this is to keep the patient quietly in bed and upon her side during the first stage of labor; to permit her to sit up, to throw herself about in bed, to walk around, or to bear down, must not be tolerated.

If the membranes fill up extensively with amniotic fluid and tend to protrude into the vagina, the colpeurynter may be used to advantage. It will prevent protrusion of the membranes into the vagina by counterpressure from below. Even when the membranes have ruptured the colpeurynter may still prove of value. With its assistance the imperfectly obliterated cervix and undilated os may be so wedged in between the head and colpeurynter as to prevent the too liberal discharge of the liquor amnii and, at the same time, hasten effacement of the cervix and dilatation of the os.

When the os is fully dilated, and when there is no further obstacle to the descent of the presenting part of the fetus, we must determine, as nearly as possible, the degree of the mechanical disproportion between the fetal head and the pelvic cavity; that is, besides the character of the pelvic contraction we should ascertain most carefully the size of the child's head and the position in which it presents itself. The size of the fetal head may be approximately estimated by the length and thickness of the child, and by the distance between the anterior and posterior fontanelles. But palpation—digital and manual—is not always satisfactory, and sometimes proves deceptive.

Mueller's method of pressing the head into the pelvic inlet commends itself highly. One hand of the attendant, or, better still, both hands of an assistant, press the head into the pelvis through the abdominal wall from above, while one finger in the vagina

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is in contact with the presenting head. In this way the head lies between the examining hands and we can judge, with considerable accuracy, its size and relation to the pelvic brim. The smaller the pelvis, or the larger the head, the greater the difficulty of pressing the latter into the pelvis, and the more may we see and feel its globular shape above the symphysis pubes (Figs. 2 and 3).

One of the most valuable indications of the size of the fetal head is the direction of the sagittal suture. If this suture runs transversely close to the promontory or the symphysis pubis, and only a

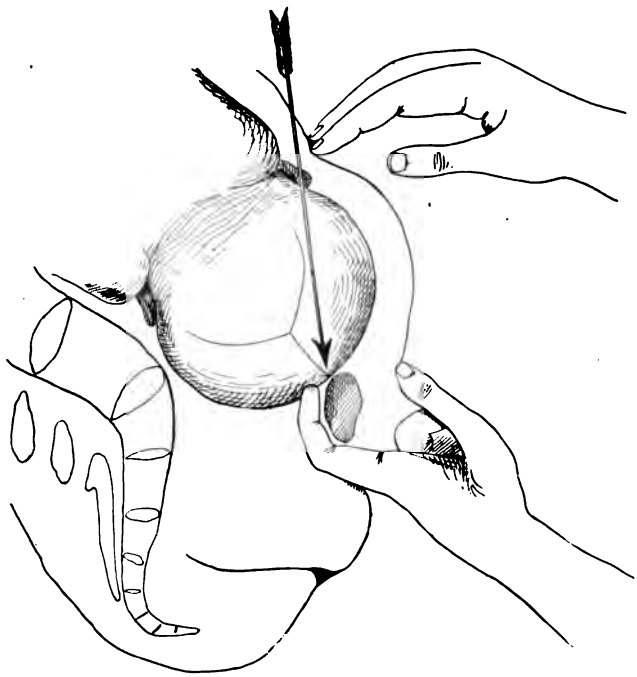

FIG. 2.—Mueller's method of pressing the head into the contracted pelvic inlet. The disproportion between the head and the brim is considerable.

small portion of the upper parietal bone can be felt, the disproportion between passage and passenger is great; if the reverse obtains, however, and the sagittal suture is near the axis of the pelvic cavity, and both parietal bones can be palpated over a considerable extent, the disproportion is small.

When tenderness and swelling of the pelvic soft parts, or the presence of a caput succedaneum makes it impossible to judge the case correctly, the examination must then be made with two fingers and under an anesthetic (Fig. 2). The attendant must have no

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doubt in his mind regarding the character and degree of the pelvic contraction, as well as the size and position of the head, before he concludes definitely what course to pursue.

The problem to be solved after the diagnosis has been made, then, is this: Is the case one which justifies the test of labor, or is it one for prophylactic version, forceps, perforation, pubiotomy, or possibly for Cesarean section?

When the disproportion between the head and pelvis is small, the head well flexed and in a favorable position at the brim, when

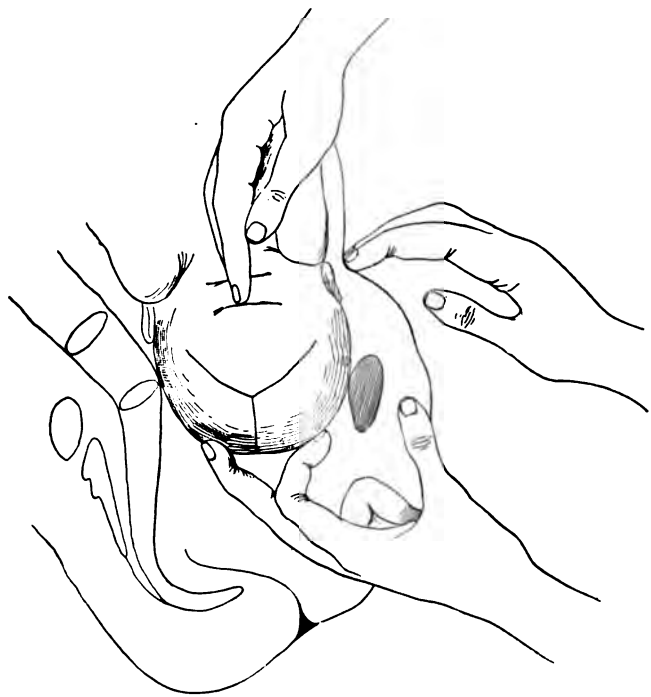

FIG. 3.—Shows that the disproportion is not great and the head forced into pelvic cavity by Mueller's method.

the pains are regular, strong, and effective, the best treatment for both mother and child is to wait, the *test of labor*. Nature's expulsive powers take better care of the molding of the head and its slow forced descent through the narrow pelvis, than any other operative aid can possibly accomplish. Tens of thousands of cases of narrow pelvis have delivered themselves spontaneously and successfully without serious injury to mother or child. This statement cannot be refuted; but it should be reiterated emphatically

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again and again, for many busy obstetricians, whether specialists or not, refuse to recognize nature's slow but efficient work because they have no patience and want to get through with the case as quickly as possible.

An occasional examination, to note the progress of labor, is necessary. As soon as the expulsive pains become manifest, the usual support for the patient's hands and feet must be given in order to obtain, with the least suffering, the greatest benefit from the abdominal pressure. Pressure upon that portion of the fetal head which still remains above the brim materially assists in forcing it into the pelvis. Powerful uterine contractions and energetic abdominal pressure are indispensable for spontaneous labor in narrow pelvis. When the pains and abdominal pressure are weak from lack of innervation, imperfect uterine musculature, uterine inertia, or flaccid abdominal walls, or when the patient is nervous and exceedingly sensitive, when the head shows no disposition to descend after the membranes have ruptured and when it does not engage firmly, the test of labor must be abandoned and prophylactic version substituted.

As to the advantages and disadvantages of prophylactic version, obstetricians differ widely. An after-coming head, even when easy of adaptation and molding, unless promptly delivered, may end in the delivery of an asphyxiated or dead child. A conjugate diameter under 8 cm. is quite unfavorable for the infant. The prospects of a living child are further lessened when it is born asphyxiated; many children die in consequence within a few days after birth.

Prophylactic version is far more favorable to the child in the multiparous than in the primiparous woman. In the latter the rigidity of the pelvic soft parts makes the extraction of the after-coming head more difficult just at the time when quick delivery is so essential to the life of the child. Version is comparatively easy of accomplishment if performed soon after the membranes have ruptured, and the fetus is more apt to survive. Version is more difficult and the prospects for the life of the child are less favorable in proportion to the time lost between the rupture of the membranes and the operation.

As far as the mother is concerned, prophylactic version furnishes better results than the test of labor. Version and extraction of the child consume but a short time, the soft parts are less subject to pressure necrosis, the patient is saved many hours of suffering and the danger of infection is materially reduced.

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The obstetrician is not infrequently embarrassed when called upon to decide whether in the case before him, it is best to subject the patient to the test of labor or to resort, without loss of time, to prophylactic version after the bag of waters has broken. If, in case of version, the child is delivered dead or asphyxiated, the obstetrician may justly say to himself that a better result might have been obtained with the test of labor. Again, if waiting leads to disappointment, he regrets not having resorted to prophylactic version earlier in the progress of the case. In all instances of abnormal head presentation, such as deflection, occipitoposterior position, or brow or face presentation, prophylactic version is always the proper procedure in cases of moderately contracted pelvis.

What of the use of forceps in cases of narrow pelvis? There is a place for them. When a well-flexed head presents in a favorable position and is fixed in the inlet and labor is arrested in spite of vigorous uterine contractions and brave efforts at bearing-down on the part of the patient, it is well to think of forceps (Fig. 1). Under such circumstances prophylactic version is not justifiable. To continue the test of labor will result in serious injury to the mother's soft parts, asphyxia, or the death of the child and, possibly, rupture of the uterus in certain cases. No obstetrician worthy of the name will permit his patient to suffer many hours under conditions like this. No one should wait from twelve to twenty-four hours, not even three hours; nor much less wait until the patient's condition arouses anxiety by an increase in temperature, pulse frequency, a tender abdomen, and a hot, dry, and sensitive vagina. A mother exhausted in the extreme, nervous and excited, filled with apprehension, who refuses to be comforted, and whose sole thought is to be relieved, is no longer a proper subject for waiting. Indeed, the obstetrician who knows his business and who does his duty, will not permit his patient even to come to such an extremity. Long before this juncture he will have given the forceps a careful and judicious trial. In many of these cases the delivery of a living child results and comparatively little injury to the mother is recorded.

If after an intelligent, earnest, and a moderate attempt at delivery with the forceps nothing is accomplished, the choice lies between perforation, pubiotomy, or hebosteotomy and, possibly, Cesarean section. Repeated and protracted efforts at delivery with the forceps, under the conditions just described, cannot be condemned too severely. The forceps should never be applied to a head floating loosely above the inlet as illustrated in Fig. 4.

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Craniotomy is to be thought of only when the child is dead. The problem is a different one, however, when the child is still living and when, in spite of all it has endured, the heart continues to beat strongly and regularly. Prophylactic version has already been excluded. The forceps have failed. The problem now resolves itself into perforation of the living child, splitting of the bony ring of the pelvis, or abdominal hysterotomy. If the patient be at her home and aseptic operative intervention doubtful or impos-

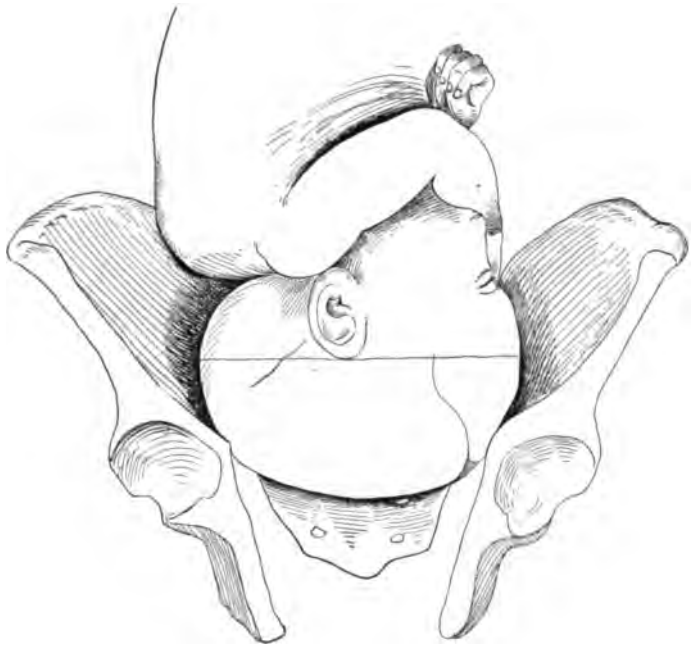

FIG. 4.—Head above brim in justo-minor pelvis; deflected, and unfavorable for the application of the forceps.

sible, perforation of the head of the living child is considered justifiable by the best authorities. This operation gives the mother the best chance to live. It is far different when the patient is in a hospital surrounded by all the benefits that may be derived from asepsis. Here craniotomy upon the living child is, in the management of the cases under consideration, totally unjustifiable; hebosteotomy, symphyseotomy, or Cesarean section may be performed with almost perfect safety to both mother and child.

Splitting the bony ring of the pelvis by a subcutaneous symphyseotomy or hebosteotomy creates so much space that, even in

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cases of flat and generally contracted pelvis with a conjugate of 7 cm., a head of moderate size may pass through the cavity with more or less ease. Most of the present-day American and English obstetricians prefer Cesarean section even to subcutaneous division of the symphysis or pubic bones, notwithstanding that the after-care of pubiotomy or symphyseotomy has been very much simplified. That there is a disagreeable feature to the bone-splitting operation cannot be denied; but it ought not be forgotten that Cesarean section, while easily and quickly performed, necessitates the opening of the abdominal and uterine cavities. Even though this operation is now performed hundreds of times successfully for various indications, the fact remains that it is a formidable procedure and that it is never free from grave danger.

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DISCUSSION OF THE PAPERS OF DRS. MORRIS, POTTER, AND ZINKE.

Dr. E. Gustav Zinke, Cincinnati, Ohio.—I do not know much about Dr. Morris' artistic procedures to make possible and to facilitate a pregnancy in the unfortunate cases illustrated by him; but, I cannot help saying to myself that it would be a great accomplishment if, after a mutilating operation upon the internal genitalia, we could, by another plastic procedure, establish the possibility of pregnancy. I will confine my remarks very largely to Dr. Potter's honest, frank, and well-meaning paper.

Dr. Potter has virtually placed the obstetrician of to-day on trial. What I have said in my paper pertains to narrow pelves only. Dr. Potter has extended prophylactic version to normal pelves, natural

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presentations in otherwise uncomplicated labors and to cases in which there is no difference in proportion between the pelvic passage and the child to be born. He has made some reference to cases of persistent occipitoposterior position of the occiput and to face presentations. I have seen a good many cases of persistent occipitoposterior position, and also many of face presentations which were, unquestionably, benefited by an early version, and I unhesitatingly endorse the practice in these cases. But he who is thoroughly familiar with the means of diagnosis of the various presentations and the position of the child and with the mechanism of labor characteristic of them, knows that the vast majority of cases of occipitoposterior position correct themselves spontaneously, or with a little assistance on our part, if the head is well flexed and easy of configuration. The competent obstetrician who examines his patient early and carefully, knows that, when he hears the fetal heart's impulse to the left of the median line of the abdomen and below the level of the umbilicus, with the long axis of the uterus corresponding with the long axis of the mother's body, the child's head will enter the pelvic inlet with its anteroposterior diameter in the right oblique diameter of the pelvis. He also knows that when, under such circumstances, the head is well flexed, it will readily descend into a normal pelvic cavity and that, in the vast majority of cases, the occiput rotates anteriorly and the head is expelled as though it had been in an occipitoanterior position from the beginning. Many of these cases deliver themselves without much difficulty; it is only when there is a disproportion between the head and the pelvic cavity that delay is encountered and the occiput persists remaining posteriorly. Here, too, version is not only justifiable, but indicated. A prophylactic version in many of these cases, even in a normal pelvis, may give a better result than the test of labor—waiting for anterior rotation. It will lessen the sufferings of the mother, shorten labor and result in less damage to the soft parts. But as long as the pelvis is ample, as long as the head is well flexed and descends readily into the cavity, as long as rotatory movements of the head are evident, as long as the pains are sharp and effective, and the mother's soft parts remain moist, soft, and free from tenderness, and as long as there is no elevation of temperature or increase in pulse frequency, just so long it is our duty to wait and permit nature to take care of the case.

I must take issue with the author of the paper in those instances in which he resorts to version in normal cases, even with the most careful aseptic precautions, simply for the purpose of shortening labor and of giving himself an opportunity to attend to another patient. This is wrong. It is a dangerous practice and misleading doctrine.

This subject was, in a measure, discussed yesterday. It is just this sort of needless interference, or better still, meddlesome midwifery, which, if it is sanctioned by the profession, will render the maternal and fetal mortality and morbidity of obstetrics higher than they have ever been in the past.

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DR. G. VAN AMBER BROWN, Detroit.—I have done the operation Dr. Morris has described once, hoping that pregnancy might follow. The woman has not become pregnant. It is now three years since the operation was done. We have been able, however, to preserve her menstrual function and she has a very much better nervous system than she had before her operation.

Along the line of conservative surgery of the uterine adnexa, some eight or ten years ago I presented before the Michigan State Medical Society a paper on this subject in which I reported twenty-two cases. Since that time, a paper by Dr. Clark, of Philadelphia, has appeared in which he has quoted from my publication. My object in particular in writing the paper was to present one case which I felt was of especial interest. A woman after nine years of married life was very anxious to become a mother. I studied the question and found encouragement from experiments which has been performed in animals. For instance, with a double cornuate uterus (as in dogs), it is found that you can remove one cornua of the uterus and on the opposite side the ovary and that pregnancy will take place through the so-called pelvic flow. When I opened this patient's abdomen I found a large tube down, with an immense ovarian cyst. On the other side there is a small ovarian cyst. The woman had a retroverted uterus. We did shortening of the round ligaments. I left her with a uterus in a normal position and just a part of the tube on one side, with an ovarian tissue. On the other side the tube was taken out entirely and part of the ovary, so that the woman had an imperfect tube on one side and an imperfect ovary on the other. We know that we can sew mucous membrane to mucous membrane and it will not heal. I made a cuff at the distal end of the tube, however, turning it back like a shirt cuff and stitched it. I told the man and wife that if pregnancy should take place it must occur soon after the operation. Eleven months and thirteen days afterward I delivered this woman of a full-term healthy boy.

I was impressed with one point, that of using the intestine in conservative surgery of the adnexa as outlined by Dr. Morris. We have not much to look forward to in conservative work on the tubes. His is a rare procedure. If a portion of the intestine utilized as a tube acts as Dr. Morris has said it does, it seems that this gives us new hope along this line.

As regards adhesions, if fat does prove to be of any use, would it not be feasible to dissect the redundant fat from the abdominal wall when it seems advisable? Try out that fat, let it cool and use it intraabdominally.

DR. ISADORE L. HILL, New York.—My remarks will be limited to the example set by brilliancy in operating. When Dr. Morris opens the abdomen of a patient from time to time to observe progress in interesting experimental work and does resection of the bowel as one step of an operation, for the theoretical cure of sterility, it is perfectly safe, because he can do it. He is highly skilled and there is little risk. Moreover, there will be few who have the courage to follow his example and few patients who would demand the operation.

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When we come to the question of normal obstetrics which is going on all the time and which nearly all physicians feel themselves qualified to practice, the force of example is more important, because if we recognize a new procedure or the general adoption of an old one like this on a large scale it would be very dangerous.

Dr. Potter has done version in about 40 per cent. of his recent cases. It has been done by him without any mortality and we cannot criticise his work. But version has been done for centuries and no one else has been endowed with power to do it the number of times that he has without a mortality, and yet no new procedure has been exploited by Dr. Potter to revolutionize the operation.

Yesterday Dr. Julius Levy, of Newark, gave us the statistics of mortality in the practice of midwives and Dr. Harrar told us what happened in 100,000 labors in one of our greatest obstetrical institutions, and we find a surprisingly small number of women died when taken care of by midwives, and why? The midwife is not efficient. But most of the time she allows Nature to take her course. That is the only salvation in midwife practice, not that it is an ideal system of obstetrics. I feel convinced it would be safer for women to be abandoned on a prairie and let them deliver themselves with such means as they themselves could improvise than to be taken care of by the rank and file of our practitioners if version were done by them on the scale that Dr. Potter has done it. I believe the morbidity and mortality would be less.

Dr. Harrar's statistics showed a higher mortality rate for cases in the hospital than for outdoor service. I have conducted an outdoor service for fifteen years in which students do the work. They are not good obstetricians. There is nothing to recommend the system except one thing and that is, they are instructed to keep their hands off. Their work is checked up as it also is in the outdoor department of the Lying-In Hospital. They are on a case a certain length of time and then make a report. A little later they make a second report. Then their work is checked up again and again by staff physicians and they are not permitted to interfere. As a result, the lowest mortality statistics you will find anywhere in obstetrics are in the supervised outdoor obstetrical services where students do the work, and the more highly trained obstetricians supervise. They will not allow students to do anything that is not conservative and safe merely to hurry a case along. In private practice the physician is often pressed by the demands of his other work and it is not wise to set an example of frequent radical interference for slow labor. Even in the splendid statistics of Cesarean section given in the New York Lying-In Hospital report, we found yesterday that Dr. Harrar spoke of thirteen cases among the deaths that occurred from peritonitis following Cesarean section. Undoubtedly Cesarean section saves many lives, but there is also a probability that some of these cases might have been subjected to the test of labor and might have delivered themselves if the operation were not so attractive.

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DR. A. B. MILLER, Syracuse, New York.—This picture exhibited by Dr. Morris reminds me of an experience which was actuated by his writings which I feel it is timely to bring to the attention of the Association. I had a patient from a neighboring city who consulted me following an operation for the removal of both ovaries, with all the reflex symptoms which we see after that operation. She desired that her symptoms be relieved, if possible, and this was about the time when we were thinking of transplanting ovaries to lessen symptoms. I told her it might be possible to transplant an ovary from another person and she might be benefitted. She jumped at this suggestion at once. It seemed what she wanted had never been heard of before, an idea which has been advocated on this floor by two or three speakers. I referred the matter to the patient to decide. I felt that my judgment was none too good and hers was worse. I suggested that we make use of the services of an alienist and after that to consult also two internists, which she did. I received a communication that all three had advised that an operative procedure be resorted to, such as transplantation of an ovary, in order to see what the results might be. A few days subsequently she made preparations to go to the hospital. Dr. Morris has told us that he finds other patients are not only anxious but are willing to give up a portion of an ovary if it will benefit some one else. I stated to her that the patient from whom I was going to get an ovary was a colored woman. She positively objected to this and said she did not care to have the ovary of a colored woman transplanted into her. Within a week or ten days another patient came in and the operative procedure was performed. Strange as it may seem, while the operative work was done sixteen months previously, she had following the operation two normal menstrual periods but her menstrual condition from this time did not seem to improve. I advised her to take a rest in an institution in the northern part of the state for her nervous condition. She did so and remained in this institution for eight or nine months. At the seventh or eighth month I received a communication from her stating she was pregnant and apparently was very much delighted. She also stated that I was the father of her unborn child; that she had conceived atmospherically and there was no question but what it was going to be a boy. She said she was coming to our city to be confined. It turned out to be one of those cases of pseudocyesis gravidarum. I have learned within the past year that this woman has recovered her health.

We have had other cases which have a bearing on Dr. Morris' paper. In one case I removed the tube and ovary on one side; taking the tube off from the cornu of the uterus, leaving a portion of the tube on the opposite side. Five or six years afterward the patient came to see me and stated that she had an abdominal growth and desired me to perform an operation for its removal. I examined her carefully and found that she was about to become a mother. It is difficult to see how with a portion of an ovary on one side and a portion of a tube on the opposite side, that this woman could con-

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ceive. Had I not done the operation I would be skeptical. But we are told that this is not so infrequent.

I am glad to hear the report of Dr. Potter and to learn the progressive work he is doing in Buffalo. I happen to be the state examiner in obstetrics and gynecology and I will certainly be more considerate to students than I have been in the past, because I have not accepted version for those conditions which he has advocated, perhaps as freely as I might be justified in doing.

DR. MERRILL A. SWINEY, Bayonne, N. J.—I would like to ask Dr. Morris what he would do in a case like this: I had a patient about two years ago who had tuberculosis of the outer part of both tubes, which were closed and very edematous, with the outer two-thirds covered with miliary tubercles. I tied them off as tightly as I could, so they would reopen (Kelly). I left about an inch on one side and three-quarters of an inch on the other. This woman is very anxious to have a child. She was twenty-two years of age when operated upon and has not conceived. She is bothering me a great deal, as to an operation which would in some way enable her to conceive. We have examined her husband's spermatic fluid and it is normal.

DR. JAMES E. DAVIS, Detroit.—I would like Dr.Potter to state specifically the technic which he follows. I wish he would also state the average time required for the care of cases.

DR. ABRAHAM J. RONGY, New York.—I believe that I was one of the gentlemen to whom Dr. Potter was grateful for the discussion of his paper last year. I think Dr. Potter contributed a much better paper this year. However, he puts us on the defensive, in that he comes before us with a statement of what he can do and cares very little what others cannot do. That leaves very little room for discussion.

I fail to see wherein version is indicated in 40 per cent. of any man's obstetrical practice, or as in this instance, in 200 cases out of a total of 500.

The doctor stated that he performs versions in primipara in whom the cervix is dilated or dilatable, for the purpose of shortening labor. I feel that the woman ought to be given a chance to see what she can do herself and, therefore, Dr. Potter's procedure has no place in obstetrics.

I should like to ask Dr. Potter why he does not use small doses of pituitrin, particularly in multiparous patients in whom the cervix is dilated or dilatable. In such cases small doses of pituitrin will terminate labor much sooner than he can terminate it by version. I am sure there is no risk whatsoever attached to the use of small doses of pituitrin in the hands of such an astute obstetrician as Dr. Potter.

For right occipitoposterior positions he did version 115 times. What I said last year I will repeat this year that when a multipara is examined early in labor you are likely to find the head in a posterior position. That in itself is not an indication for version. If

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the woman is given a chance, the posterior position will rectify itself as soon as she has strong pains.

Finally, the conclusion that I have come to after listening to Dr. Potter's paper is, that he can deliver a patient better than the average obstetrician but when the average physician reads that version is used as an obstetrical procedure for the purpose of shortening labor, and that statement is endorsed by this Association, it will tend to lower instead of raise the standard of the practice of obstetrics.

DR. HERMAN E. HAYD, Buffalo, New York.—It is an unusual thing for me to discuss an obstetrical paper, but as Dr. Potter comes from my city and his statements have been challenged, I am pleased to say that I stand sponsor for his honesty and integrity and whatever statements he made last year and to-day are based upon honest convictions, the result of an enormous obstetrical experience. So far as his mechanical and technical ability are concerned, I may add, that I never saw any one do a version more beautifully than he can. I studied in Vienna and worked under Sparth and Carl Braun and for years had a good obstetrical practice and I should know something about obstetrics. I do not wish to stand sponsor for Dr. Potter's obstetrical methods as I am not qualified in those lines, but I do believe, I can judiciously and intelligently pass judgment upon them. Last year most of the members thought they had "knocked him out," but you see, he comes back with the courage of his convictions and we cannot help but admire him for it.

I am satisfied, that he is going to stimulate greater interest in this subject and that you obstetricians will be practising more versions than you have in the past, because, if Dr. Potter can get such results as his papers show, so can Rongy, Zinke, and other first-class obstetrical operators. Of course, the general practitioner has no business to do what Dr. Potter is advocating, unless he is specially trained in modern surgery.

He takes the stand that most delayed labors are the result of faulty positions, such as occipitoposterior, and that he finds them so often because he interferes so much earlier than you do and can with his hand in the uterus make a better diagnosis than you can by fontanelles and overlapping sutures. Secondly, that forceps delivery is more dangerous to mother and child than a version. Thirdly, that he shortens labor by this interference and thereby lessens pain and suffering with no increased dangers to mother and child, as he has proved in these two papers.

With a record of 700 versions he brings his charts and hospital records of his last 200 cases to prove his position. It does seem to me that something should have been done to lessen the terrible pains of child bed; and yet after thirty-five years of practice the same teaching as I got, the student gets to-day, notwithstanding the strenuosity and the brains that are exhibited in the arts and sciences and in constructive mechanics, where such wonderful advances have been made. We saw how willingly and voraciously twilight sleep was accepted, because it promised relief from suffering, but it has failed. Dr. Potter was educated under the most conservative

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teaching, where he was told that a man must have an obstetrical temperament to do good and safe obstetrics, which meant to sit for hours until a woman delivered herself. Gradually his business grew and necessitated haste on his part, but with it came relief of pain and suffering and no increased mortality or morbidity to mother and child. Take his last 700 cases without a maternal death and no serious injuries to the mother's soft parts. Do not question his ability to recognize a torn perineum; a man who has done all kinds of abdominal and pelvic surgery and 200 Cesarean sections will not overlook perineal tears.

Among the cases noted in the paper of to-day eighty-five were primipara and 115 multipara, and three cases were left occipito-posterior positions and thirty were right occipitoposterior positions, and these posterior positions are recognized as the cause of tedious labors. Of these cases, sixteen of the babies were still-born, one hydrocephalic, on which he perforated the after-coming head; two were macerated; two placenta previas; eight had prolapsed cords, two complete, and six incomplete, and so on. I do not know any obstetrician in this hall to-day or in this country who can show a better record with these complicated conditions. Gentlemen be judicial. Dr. Potter has no doubt brought us something good and you experienced men must try it out. There is no "divinity shaping his ends or directing his work." He simply cut loose from all obstetrical teaching, and I cannot help but say that there must be much that is good in what he says, contrary to the objections of other distinguished teachers of obstetrics in this Association.

Last year, the members of this Association questioned Dr. Potter's honesty. He took you all by surprise in the large number of versions he had done, but this year he challenges you to beat his record, and makes these claims: (1) He shortens labor without danger to mother and child. (2) That long labors are usually due to occipito-posterior positions, and that these positions should be early corrected, even, if in the great majority of cases they would correct themselves. (3) He lessens pain and suffering, and (4) that by his methods he can better attend to his large practice and conserve his own energies and make the work of the skilled and consulting obstetrician less onerous.

Dr. Rongy advocates pituitrin to hurry his cases and Dr. Potter relies upon version, with which he says he has absolute control of the delivery, and with his skill, care, and antiseptic precautions, I think he presents a very strong brief to-day in this second report of 200 cases.

DR. MORRIS (closing on his part).—In the first place, concerning the use of the patient's own fat, tried out, I have not employed this method. Some of that fat is changed by heat into an albumin which in the patient's individual case might sometimes become a toxalbumin, but that may be a theoretical objection. A slice of the patient's own fresh adipose tissue, as it comes from any part of the abdomen, tossed into salt solution until you are ready to use it,

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would be accepted by that patient. The patient will take up anything that originally belonged to her in the way of tissue in the nature of a graft. Ether for adhesions I have not tried at all.

In a case of tuberculosis of the oviducts in which the tuberculosis has presumably come to a halt, in all probability the lumen is now closed. I would treat that case not by attempting to open that closed lumen, but by making a good long incision in the manner I show you, so that the ovum could get in without much difficulty and to prevent immediate closure, I would put in a lot of aristol to keep the margins apart. Before the aristol has become absorbed entirely the cells from the lining of the oviduct will conduct repair, thus presenting an obstacle to closure by peritoneal exudate. If there were much inflammatory reaction, the peritoneum might throw out an exudate and seal the whole area in again, but at any rate, that would be my first resource as stated. That failing and the patient being willing to undergo extensive experimental work, which is purely speculative, one might bring a segment of the ileum, include the ovary and carry a bit of the ileum clear to the open fundus of the uterus. I have demonstrated that this may be done, but the usefulness of it I do not know anything about. I have only done it once, both the patient and I agreeing that it was purely experimental.

Dr. Potter (closing).—I do not do these versions so that I can get home quickly. I do versions entirely in the interest of my patients. I consider it better to do a version than to use instruments and in that way I reduce their suffering at the time of labor.

So far as the after-results are concerned, I have been engaged in practice for twenty-six years, and I find my patients get well better and quicker now than they used to when forceps were used. I am pleased to note that Dr. Zinke said more about version this year than he did at the last meeting. He mentioned it several times in his paper. Whatever you find out to be the position of the fetal head will depend upon when you examine your patient. It is the same way with Cesarean section; it is a matter of opinion of the different operators.

As to my technic, it was fully explained in the paper I presented last year. When a woman is about to be confined the vulva is shaved and she is catheterized. She is anesthetized usually with chloroform. We have not had any bad results from chloroform. When the patient is sound asleep she is placed on the table, or if she is a heavy woman, I put her on the table before she is asleep, because that saves lifting her. Then under deep anesthesia, with the legs held up, using a sheet for a leg holder, or with two assistants, one on each side, holding up the legs, I use a long glove that reaches to the elbow. I use sterilized green soap. I introduce my left hand well up to the fundus so that I can explore the uterine cavity completely. I do not grasp one foot the way the text-books tell us, but take hold of the two feet, I get them between my fingers and bring them down gently, at the same time lifting the head up on the outside. When the knees are outside the vulva, the version

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is complete. Then I make gentle traction toward the pelvic floor, rotating the back of the child anteriorly by pulling on the anterior leg. When the scapulæ are out, I reach for the arm but not before. I have never broken the arm of a baby but once, and that was a dead macerated fetus I was getting out in a hurry, because the woman had to be delivered quickly. Getting hold of the anterior arm, bringing it down and then following with the posterior arm, I hold the baby at right angles to the mother with my fingers in the child's mouth, because the minute you let extension take place you have trouble. It is flexion from the time you start until the time you finish.

Bring the chin down, hold the feet up and bring the baby out. When the mouth is out let the baby get rid of the mucus, or milk it down from the larynx. The baby will gasp when the head is out. Under deep anesthesia, if you have two assistants, you can bring the knees of the patient together, because it relaxes the soft parts; then bring the head down and out. I find this method of delivery is far better for the mothers and children than the use of instruments, as there is no pressure on the child's head.

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A CASE OF GANGRENE OF UTERINE FIBROID FOLLOWING PARTURITION; PANHYSTERECTOMY.

BY

RALPH WALDO, M. D., F. A. C. S.,

New York.

THE specimen presented was removed from Mrs. W., colored, aged twenty-four. As far as obtainable, her family history was good. Mumps was the only disease she had ever had. She began to menstruate at the age of fifteen years. At first, she was very irregular, but after marriage became regular. Menstruation never lasted more than four days at a time, and was moderate in amount, associated with slight pain. Married eight years and had four normal deliveries the first seven years before, the last in Lebanon Hospital. Had no operations and never had a vaginal discharge.

January 30, 1916, she was admitted to Lebanon Hospital with a temperature of 100° F.; pulse 88; respiration 24. The same day was delivered normally of a living, premature, female child. The temperature did not fall. I first saw her February first, when she complained of abdominal pain and tenderness; temperature 100.2° F.; pulse 120; respiration 24. On examination the fundus was found to be on a level with the umbilicus, and tender.

By vagina the os was found open and a tumor was easily palpated within the uterine cavity, attached by a broad base to the lower portion of the uterine wall. There was a profuse lochia, but no fetor. A diagnosis of submucous fibroids was made. The patient's temperature gradually rose and on the fourth day following delivery was 102° F.; pulse 120; respiration 28. I believed that we had a gangrenous fibroid to deal with. She was taken to the operating room and panhysterectomy by the abdominal route performed. There was a gangrenous fibroid, the whole endometrium was sloughing and very foul, the uterine wall was thick and soft, but as far as could be determined, there was no involvement of the peritoneum.

In performing the operation every possible care was taken to protect the neighboring structures and the abdominal wall with gauze sponges. The upper end of the vagina and the abdominal wall were closed. The morning following the operation the temperature was 99.6° F., but during the afternoon it rose to 103.2° F.; pulse 128; respiration 28. For the next four days the temperature was between 104.4°, and 102°; the pulse was between 100 and 156, and the fat in the abdominal wound broke down. A wet bichloride dressing was applied. She gradually improved until the 18th day after the operation, when a left lobar pneumonia developed, with temperature as high as 104.2°; pulse 158; respiration 50. This

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condition lasted for three days, after which all of the symptoms gradually improved, and she was discharged from the hospital cured, March 16, 1916.

Remarks.—Fortunately this is a rare complication of parturition; but previous to this I had seen two similar cases, and from experience with these, though it is small, I am convinced that early panhysterectomy, before the peritoneum is involved, gives the patient the best chance for her life.

DISCUSSION.

DR. HUGO O. PANTZER, Indianapolis, Indiana.—About twenty years ago I confined a woman who, on the following day revealed a large tumor to one side of the pelvis. Foul discharge followed. This occurred when we were not doing hysterectomy by a reliable technic and rather shunned opening the abdomen. A tumor was removed *per vaginam* the size of a fetal head. The patient made a good recovery.

DR. WALDO (closing).—I have seen quite a number of cases of gangrenous fibroids in nonpregnant women. Two cases of gangrenous fibroids during parturition occurred in the practice of other men and these two patients died from sepsis. Considering the condition of the uterus and endometrium found in the case I have related, I do not believe the woman would have survived. Fortunately we performed panhysterectomy before there was apparent infection of the peritoneum, and she did not have peritonitis following the operation.

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OSTEOMA OF THE DESCENDING RAMUS OF THE PUBES AND ASCENDING RAMUS OF THE ISCHIUM OBSTRUCTING THE PELVIC OUTLET; PREGNANCY; REMOVAL OF OSTEOMA.

BY

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I PRESENT this case on account of the rarity of the occurrence of osteoma in this situation. In three works on obstetrics referred to by me, I saw no mention of dystocia from this cause, and in my own examination of women, pregnant and nonpregnant, in my office and hospital work, this is the only one I have seen. In other parts of the body the occurrence of osteoma is not infrequent.

The description of osteoma presented by Senn is so clear and succinct that I cannot do better than quote it.

"An osteoma is a tumor which possesses a structure resembling that of cancellous or compact bone, produced from a congenital or postnatal matrix of osteoblasts. Osteomata occur usually in connection with some part of the skeleton, but they are also found in parts and organs that have no genetic relations with the skeleton, as in the pia mater and the brain. It is doubtful if the tumors which are not in connection with the bone present the structure of bone so perfectly as do osseous tumors of the skeleton. Fleischer described an osteoma of the tendon of the iliopsoas muscle in which he found the Haversian canals and the medullary tissue arranged in the same typical manner as in normal bone. In another heterotopic osteoma described by the same author, the tumor was situated upon the inner surface of the dura mater. In both instances bone-production was traced to the connective tissue and independently of the presence of osteoblasts. According to Fleischer's interpretation, the connective tissue at the seat of tumor-formation became more vascular and presented active tissue-proliferation, and was transformed into hyaline masses in the interior of which the bone-cells appeared. The hyaline lumps become coalescent and undergo calcification. Osteoblasts were active in the further development of bone. The capacity of connective tissue to produce bone has been recognized for a long time, and this view of the bone-producing power of connective tissue is accepted by most of the modern pathologists.

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"A distinction must be made between calcification and ossification of connective tissue. The production of bone is carried on in the embryo by a distinct and specific part of the mesoblast, resulting in the formation of the skeleton and the growth of bone, and the production of new bone can take place only from a matrix of cells derived from the osseous system. The displacement of osteogenetic matrices into the surrounding tissues is as liable to occur as the displacement of matrices of epiblastic and hypoblastic tissue. Heterotopic osteomata are usually found in close proximity to a bone. Heterotopic matrices of osteoblasts usually result in imperfect development of the tissue of the tumor. Virchow found in the apex of the lung an osteoma in which Haversjan canals and medullary spaces were absent. Steudener found a number of small osteomata near the trachea, but entirely distinct from its rings. Lesser found in the lung an osteoma which presented under the microscope all the histological elements and the typical structure of bone.

"The metaplastic theory concerning the origin of bone is no longer tenable. A careful etiological distinction must also be made between a true osteoma and an exostosis. The origin of the former must be restricted within the limits of the definition to a growth of bone from a matrix of osteoblasts either in the bone or by displacement from a bone, while the latter is the result of a localized or diffuse hypertrophy usually following a reparative process."

The two varieties of osteoma, according to their structure, are osteoma durum and osteoma spongiosum. The latter variety, of which this case consisted, usually has its origin from the epiphyses of long bones. In this case it would appear that the tumor was an exostosis occurring at the point of union of the ascending ramus of the ischium, with the descending ramus of the pubes and in the course of its development both rami became converted into a spongy bony mass constituting the tumor.

This type of tumor is of slow growth with a tendency to limitation as to size. It does not form metastasis nor tend to recur when removed. It is painless, except from the results of pressure. It is, therefore, a benign growth. The pressure results, however, may be fatal, as where the brain is affected, or might have proved fatal in this case as a result of obstruction of the pelvic outlet, had intervention not occurred.

The case is as follows: Mrs. C. G., aged twenty-five, married three years. One child, age two and one-half years. Entered the Post-Graduate Hospital, March 23, 1916.

About two years ago felt a little lump, hard and painless, on the bone to the left of the vagina. Was referred to me at the Post-Graduate Hospital. She was then three months pregnant.

Examination showed a hard bony mass arising from the ramus of the pubes and ischium, and almost obstructing the pelvic outlet,

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growing forward and inward; having, apparently, beneath the skin numerous sharp excrescences. A Wassermann examination of the blood proved negative.

Operation was performed March 27, 1916, and an incision made over the irregular mass from the body of the pubes down along the mass to the tuberosity of the ischium. The material was found to consist of a very irregular, spiculated, spongy, osseous structure. With a large rongeur this was cut away until the whole descending ramus of the pubes, part of the body of the pubes adjacent and the ascending ramus of the ischium and part of the tuberosity of the ischium, were removed. The soft tissues were then sutured together and a small drain placed in the center. The drain was removed in forty-eight hours. Healing was prompt and rapid, and in about two weeks the patient was allowed to sit up. She left the hospital on April 14th, being able to walk without limping.

On October 30, 1916, she was confined by Dr. C. J. Millis, who had referred her to me. The labor was normal; entire duration about fourteen hours. The baby was healthy, and strong.

Examination two and one-half months after confinement showed a firm, fibrous band extending from the body of the pubes to the tuberosity of the ischium. There was no impairment whatever of the locomotion and no evidence of any return of the growth.

The pathological report is as follows:

Patient, C. G., No. 10857, aged twenty-four.

Specimen taken March 27, 1916. Specimen received March 28, 1916. Report made April 26, 1916.

Nature of Specimen.—Growth from pelvic bone.

Gross.—Three pieces of irregular tissue of cancellous bone and cartilage. One surface is covered over with periosteum but is extremely irregular, being studded with small nobs. The under and cut surface has the appearance of cancellous bone.

Microscopic.—Covering the outer border of the growth is a rather dense irregular layer of cartilage, beneath which is cancellous bone. The cancellous bone contains large sinuses, some of which are filled with blood. It is very hard in places from the abundant deposits of lime-salts. The major part of the growth and its principal structures are bony in nature.

Diagnosis.—Osteoma.

This case is reported on account of the rarity of the condition, the extremely satisfactory result of operation, the only adverse circumstance connected with which is the possible weakening of the pelvic framework of the body. This, however, is in a large measure counteracted by the firm ligamentous structure which has taken the place of the bone and serves perfectly for the attachment of the muscles formerly attached to the bone in that situation.

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DISCUSSION.

DR. JAMES E. DAVIS, Detroit.—This case is very interesting indeed and causes one to think of the phylogenetic relation of the urogenital system and the generative system. These are very closely related and it is not an unusual thing to find deposits of bone in the bladder. Nearly every one who has done bladder work has had at some time this experience. It is also the experience of the pathologist who examines a large number of tissue sections to find numerous bony deposits of the generative system. It is a very interesting thing that the metaplasia of connective tissue into bone tissue is seen not infrequently. These cases are no doubt a return, if you will, to an embryonic condition, or there are embryonic rests remaining which later on undergo a change and development takes place, so that they become evident macroscopically.

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A CASE OF PREGNANCY WITH UNUSUAL COMPLICATIONS.

BY

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THE following case is reported because of its unusual complications.

Mrs.——came under my care March 16, 1917, being referred by her family physician. She is 5 feet 2 inches in height, weighs 165 pounds, has never had any living children, but has had two miscarriages. The last menstruation occurred October 15, 1916.

Some five years ago she consulted numerous physicians whose diagnoses all agreed, that is, that she had a large fibroid which ought to be removed. This, however, was never agreed to and for the past five years she has not been well, and has taken on flesh rapidly. She states that since her menstruation ceased, she has hardly been able to get about, and has had retching and vomiting spells.

Examination revealed an irregularly shaped abdomen, unusually large, extending up to the ensiform cartilage and yet, according to her count, if pregnant, she could not be over five months. The vaginal walls were somewhat discolored, the cervix seemed normal to the touch, although reached with difficulty, and the vault of vagina was filled with hard tissue, like a fibroid. The abdomen was very uneven, large hard masses could be outlined on either side extending to the level of the umbilicus, and above a round smooth mass could be felt up to the ensiform cartilage. No fetal heart but a bruit could be heard and for the time being, the diagnosis was doubtful. The patient was removed to the Good Samaritan Hospital. Her temperature was 99° F. and pulse 100. Repeated daily examinations were made without coming to any definite conclusion. On the twenty-first day of March, that is five days after admission to hospital, an acute appendicitis occurred with its usual phenomena, and after much persuasion, an appendectomy was done the following morning. A thickened congested appendix was removed, which contained an enterolith, some mucus and a drop of pus. The bowel movements before and after the appendectomy were most offensive. While the abdomen was opened the hand was gently swept over the tumor mass which was found to be made up of fibroid tissue encircling the lower half of the uterus up to the umbilicus, and to the sides of pelvic and abdominal walls. The balance of the tumor mass (the uterus) extended up to the ensiform cartilage like a full-time pregnancy. The walls of upper uterus were very soft and of a light grayish color. The sensation to palpation was similar to that of a soft pulpy cystic mass, and not at all like a pregnant uterus.

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No fetal body was outlined. That evening patient became delirious, remained so for a period of twelve hours, temperature 103°, pulse 150, but the following day showed a marked improvement in general condition.

By daily observation and numerous examinations I at last became convinced that a pregnancy existed. Up to this time numerous blood and urine examinations were made, but nothing of great importance noticed, except the marked increase of leukocytes. A consultation was held with Dr. Bonifield, who was inclined to doubt the existence of pregnancy, claiming that the condition was like a degenerated fibroid. The puzzling situation was very soon cleared up we thought, by the rupture that evening of the membranes. The expulsion of a dead five months' fetus on April 6th was without pain, and only occupied two hours from the time of rupture of membranes to birth of child. The cord was normal in structure for 6 inches from umbilicus of child, but from there on it was decomposed. Following the birth of the fetus, pus immediately gushed from the uterine cavity accompanied by loud explosions and bubbling of gas. This discharge saturated the clothing, the bed, ran down on to the floor, was of most foul odor, and we estimated it roughly as about a gallon in amount. The placenta could not be delivered by moderate pressure from above nor could it be extracted, as the fibroid mass was in the way of any manual delivery, and long placental forceps could not reach the fundus. The walls of the uterus could not be satisfactorily outlined. The odor from the profuse discharge was most obnoxious until the expulsion and daily partial extraction of parts of presenting placenta. The bacillus pyocyaneus was found in the discharge. The patient again became delirious with here and there rational moments, at which time, she complained of most violent general abdominal pain. The delirious and semidelirious state continued for a period of three days. The following serious complication added to the gravity of case. On April 7, patient secreted 2 ounces of urine, temperature 97°, pulse 84; on April 8, patient secreted 7½ ounces of urine, temperature 96–97°, pulse 80–86; April 9, patient secreted 6 ounces of urine, temperature 95–96°, pulse 80; April 10, patient secreted 16 ounces of urine, temperature 95–96°, pulse 80; April 11, patient secreted 41 ounces of urine, temperature 96–98°, pulse 90.

From the latter date onward the temperature became normal or a little above. All of placental tissue as far as could be determined had now been expelled. About 11.00 A. M. April 11th, violent attacks of hiccoughing, accompanied by most offensive flatus continued until 9.00 P. M., when repeated fainting attacks supervened, followed by deep coma which lasted until 7 o'clock the following morning. On April 12th at 8.00 A. M. a sudden spasm of abdominal pain ensued followed immediately by a vaginal discharge of about a quart of serous fluid not unlike that of amniotic fluid, but very offensive, and all day this very watery discharge continued. Vomiting began again and both bowels and urine became involuntary, patient passed into a semi-delirious state, and at times grinding the teeth. On April 13th some

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improvement took place and the discharge became bloody but was still most offensive. The temperature however was only 99° per rectum and pulse 108. On April 14th, vomiting of a greenish fluid took place. There was intense itching over the body, and a rash appeared on right chest and arm not unlike that of ivy poisoning. On April 19th, the temperature was 101° per rectum, involuntary bowel movements continued with occasional vomiting. The rash had disappeared but great pain and stiffness was noted in the right leg, especially around knee-joint. On April 20th, a remarkable improvement came on over night, the temperature and pulse becoming normal. April 26th, patient removed to her home. By July 28th, the patient was walking about the house, gained weight (up to 165 pounds), looked well, had a good appetite, no vaginal discharge and slept well.

I have merely presented a general clinical history of the case eliminating all reports of treatment as it was purely along symptomatic lines, trying to meet what seemed hopeless conditions as they arose.

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TEN YEARS' EXPERIENCE WITH EARLY MOBILIZATION AFTER ABDOMINAL PELVIC OPERATIONS.

BY
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New York.

RIES of Chicago, in the *Journal of the American Medical Association*, August, 1899, announced that after a trial of four years he placed little or no restriction on the movements of patients after abdominal section or vaginal celiotomy. They were permitted out of bed as soon as they were able to get up. Manly, Wiggin and Schaefer, agreed with the new ideas set forth. Twelve years ago Boldt began the early mobilization of his abdominal cases. Fifteen years before this he was ordering his vaginal celiotomy cases out of bed after forty-eight hours. In 1907 Brothers said the statistics of Ries, Boldt, Chandler and himself covered 1000 laparotomies and in no case had an accident occurred that could be attributed to early mobilization of the patient. Moynihan in his book, "*Abdominal Operations*", says if the patient is doing well the sooner he is allowed to sit up the better. Mayo has never seen a case of embolism in a patient out of bed before the seventh day and believes early mobilization prevents thrombosis and embolism. Pfannenstiel of Kiel (AMERICAN JOURNAL OF OBSTETRICS, August, 1908) said: Convalescence is more rapid, the healing proceeded more quickly in patients operated on by the transverse incision, especially since following the example of American operators and König treatment in Germany, by allowing patients to get up and move about in a short time after the operation. Basin invented his operation, so as to get the soldiers back in the army in two weeks.

At a time when I was operating in a hospital where Dr. Boldt had a large number of cases, I saw the advantages of early mobilization and decided to try it. In planning an operation the one great object should be to bring about as early and complete restoration of health and working ability as possible. Our operative technic should be such as will assure the greatest safety to the patient and the after-treatment, that which will secure the greatest comfort and least risk of complications. This accomplished by simple preparation, the transverse incision, the use of atropine and eserine salicylate on

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the table, with early mobilization of the patient. Early mobilization is applicable to 95 per cent. of cases. Neurasthenic patients are not deprived of rest, but are allowed to move about. We have never had an accident from early mobilization in ten years. Some operators have reported 1 per cent. of embolism. Phlebitis occurs usually between the tenth and twentieth day. Mayo believes early rising prevents it. Most of our cases are home by that time.

The advantages of early mobilization are less nausea, vomiting and distention, earlier and spontaneous action of the bowels, less liability to circulatory changes, less weakening of the muscles, better assimilation of food, early return to working ability, lessened expense to patient. The only disadvantage is that patients do not think much of an operation has been done. Patients in the hospital will tell the patient her operation was not a major operation.

The 1500 cases reported are taken from the clinic of Dr. Brooks H. Wells and were operated on by him, with my assistance, or were operated on by myself. These cases I had charge of and directed the care and after-treatment. The results obtained are largely due to the technic learned from him and to his suggestions in the preparatory and after-treatment.

A thorough examination is made including heart, kidney and lungs. The heart is considered normal if no edema, cough or shortness of breath exists. Fibroid heart, dilatation, fatty brown atrophy and degenerative changes are most feared. They can be excluded if the heart is normally situated and there is a normal pulse.

In anemia, if extreme, the operation is contraindicated. If the hemoglobin is below 33 per cent. preparatory treatment is necessary before operation. In chronic anemia from fibroids there is liable to be brown atrophy of the heart. In chronic inflammation or tuberculosis of the lungs, the operation is only justifiable if the disease is quiescent. Cases of acute or chronic inflammation of the kidneys do not stand the operation well. The presence of indican shows there is toxic absorption from the bowel and that these should be thoroughly moved before operation. In diabetes the chief danger is from coma. If nutrition is good and the sugar percentage low, the operation, if very necessary, is done.

Kelly says that about 5 per cent. of gynecological patients have tube casts and albumin, that a higher percentage have them after the operation. This is usually transient. Nephritis may be caused by tumors pressing on the ureters, infection from an exudate or infection of the pelvic peritoneum. In patients with nephritis, the operation should be quickly done with little loss of blood, as

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shock is not well borne. If casts are present, prolong the preparatory treatment and give lots of water. In acute nephritis with granular and epithelial casts operation is contraindicated.

Preparation of the patient is very simple. Severe purging is avoided because it weakens the patient and produces postoperative abdominal distension. If the patient is badly constipated castor oil, 2 ounces, is given forty-eight hours before operation. Purgatives and fasting cause distention and acidosis. The normal condition of the bowel is that of partial distention. If the bowels are completely emptied by purging and fasting, Nature causes the formation of gas to make a bolus for the intestine to act upon, and we get distention, plus a weakening of the patient and a tendency to acidosis. The patient is given full diet until and including the evening of the operation. All that is necessary, in most patients, is to give an enema the night before the operation to empty the lower bowel. An enema should never be given the morning of the operation, if it is, the bowels will move on the table, or in the dressings after the operation. The abdomen is shaved, washed with alcohol and a sterile dressing applied. If necessary the vulva is also shaved and an iodine douche, 1 dram to the quart, is given. If the patient is nervous, veronal or strontium bromide is administered. In the morning the patient may be allowed a cup of coffee with a small amount of cream. She is encouraged to drink water. If the patient is very nervous before the operation, morphine sulphate gr. $\frac{1}{6}$, and atropine sulphate gr. $\frac{1}{150}$ are given one hour before. The field of operation is swabbed with tincture of iodine. The iodine must be applied to the dry skin. If applied evenly over the abdomen and washed off after the operation with alcohol, there is no irritation. At the end of the operation, iodine is again applied to the incision which is then covered with sterile gauze.

The vagina, cervix, and vulva are dried and tincture of iodine is applied if the operation is to be done on the cervix or vagina. The blood lost during the operation soon washes most of the iodine away. After the operation the vagina should always be packed for twelve hours to close up dead spaces and keep the vaginal surfaces apart. In one case where this was not done, Dr. Wells found that the raw anterior and posterior walls had become adherent. They were, however, easily separated with the finger. The bladder should always be evacuated before the patient is taken to the operating room. The catheter is never used unless necessary.

The Pfannenstiel incision is used in all gynecological operations; the transverse incision is made for gall-bladder operations. In the

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Pfannenstiel incision the bowels are covered by the upper flap and seldom require laparotomy pads. If pads are used, they are wet in saline and care is taken to just lay them over the intestines and not to rub the peritoneum. Sponges are used as little as possible; they rub off epithelium, cause distention and adhesions. The Pfannenstiel incision is made in the pubic fold just above the pubes. Clamps are not put on small vessels in the fat, as they cause injury to tissue of low vitality and invite infection. Most of the bleeding from the fat will stop spontaneously. Before closing, however, all bleeding must be stopped to prevent the formation of a hematoma. In cases of large tumors the incision through the fascia is made transversely into the oblique muscles, to the iliac spines and the rectus sheath is separated down to the pubes and up as far as the navel. Care must be taken not to tear the twelfth nerves, that come through the recti muscles, pierce their sheaths and supply the fascia, fat and skin. The linea alba is now divided from the navel to the pubes if necessary. The recti muscles are then separated and the peritoneum incised above. Care is taken, in going toward the bladder, to stop when the fat gets thicker, and little bleeding points are encountered; for we are then cutting in the prevesical fat.

Plain catgut No. 2 is used for pelvic operations; No. 4 for large pedicles; No. 1 for skin and peritoneum; No. 2 chromic for fascia, cervix, the levator ani muscles and perineal fascia, No. 1 chromic for the intestines and for the buried perineal skin suture. The ligatures are always applied outside of clamps. Injury to veins by clamps is a cause of embolism. Kangaroo tendon is not used, because some patients absorb it very quickly.

Abdominal drainage is never used in pelvic operations; culdesac drainage is employed only when there is oozing, or when pathological material is present that cannot be removed. We believe drainage causes necrosis of ureter, bladder, and bowel and that it is often followed by fistulæ and postoperative hemorrhage, if in contact with large vessels. Drainage prolongs convalescence and makes it stormy. In the Wertheim operation, with large raw surfaces in the pelvis under the peritoneum, we use a small drain just through the top of the vagina to take away the serum from these raw surfaces. In gall-bladder operations a rubber tube, sewed to the stump of the cystic duct, is the only drainage used.

The curette is used in cases of suspected carcinoma, retained placenta, or polypoid endometritis. In incomplete abortion the retained tissue is removed with sponge forceps, and the cavity is then swabbed

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with tincture of iodine to contract the uterus and arrest hemorrhage. The uterus is not packed except to control hemorrhage. The packing is removed after twelve hours.

The leukorrhea, in cases of diseased adnexa, will disappear more quickly if the tubes are removed and curettage is not employed. If both ovaries are removed, supravaginal ampntation of the uterus is done. The uterus is of no use without the ovaries, and is liable to become adherent in the pelvis, cause backache and leukorrhea. If an ovary is saved the uterus is suspended with No. 2 chromic catgut. When this is absorbed, the uterus drops into a pelvis free from adhesion. The ovaries are not resected for small multiple cysts. If a single cyst is present on the surface of the ovary, it is resected; but if there are numerous cysts, the ovary is removed. It was found that if these ovaries were resected, they again became cystic in a short time and cause such pain as to require removal. It is better to either leave them alone or take them out. Resection of the tube is never done. If resected, they close up again, become adherent, and give rise to trouble. In large multiple fibroids, the ovaries are removed if there is much disturbance to their circulation.

In supravaginal hysterectomy, the cervical canal is not touched. If there is much oozing from the cut surface, the large vessels are ligated or sutures are applied to the edge. Care is taken not to interfere with its blood supply. For this reason the cervix is not sewed over. The stump of the round and infundibulopelvic ligaments are sewed to the cervix to support it. We never get infection from the cervix. At times a small hematoma has formed under the peritoneum which drains through the cervical canal.

Vaginal hysterectomy is done for extreme prolapse; the broad ligaments fixed under the urethra. Vaginal fixation of the uterus, with shortening of the uterosacral ligaments is done for large cystocele, if accompanied by prolapse. Vaginal hysterectomy is sometimes done in fat women with movable uteri.

Section through the posterior vaginal culdesac may be performed for large pelvic abscesses; but in most cases the abdominal operation, through a transverse incision, is considered safer and convalescence quicker and freer from complications. Anyone who has much experience in pelvic work is convinced of this from bitter experience.

For retroversion of the uterus we recommend the Simpson-Mayo operation. The round ligaments are sewed to the under surface of the sheath of the recti muscles with No. 2 chromic catgut. The Baldy-Webster operation has resulted in a number of recurrences. In one case it happened at the end of two weeks; in another in six

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months. On reopening the abdomen, the ligaments were found to have pulled lose from the posterior surface of the uterus, and the small holes in the broad ligaments were filled with loose cellular tissue. As to the Gilliam operation, retroversion recurred in some cases; in others, the round ligaments were drawn through the rectus sheath, and gave so much pain, that we felt like opening the abdomen and cutting them loose. There were also two cases of postoperative obstruction of the bowels in the hospital, the intestines becoming adherent between the round ligament and the pelvic wall. Ventral suspension has been successful and without complications; but the operation was given up, because of the dystocia following these cases and of which many have been reported in the literature. Abdominal shortening of the uterosacral ligaments is done when indicated. Combining this operation with shortening of the round ligaments is rarely necessary. The appendix is always removed if the patient's condition is good.

The perineum is repaired by the flap-splitting operation, and suturing of the levator ani muscles and fascia. No. 2 buried catgut is used for muscles, fascia, and posterior vaginal wall. A subcutaneous No. 1 catgut suture is employed for the superficial muscles and skin. None of the sutures are exposed, to prevent infection. To put the parts at rest, the sphincter ani muscle is always dilated at the end of the operation. We find it seldom necessary to operate on hemorrhoids when a perineorrhaphy is performed. If the sphincter is dilated, the hemorrhoids disappear. In complete lacerations, a flap is turned down over the rectum, the sphincter-ani, and perineal muscles sewed with buried sutures. The bowels are allowed to move as soon as they want to. The diet of the patient is not restricted.

Atropine sulphate, gr. $\frac{1}{150}$, followed in ten minutes by eserine salicylate, gr. $\frac{1}{40}$, are given while the patient is still on the table. The atropine acts more slowly than eserine, so it is given first. Atropine counteracts the depressing effects of eserine on the spinal cord, and assists the action of the eserine on the intestines. Eserine should never be given without atropine. Patients who are given atropine and eserine on the table do not have gas pains and do not suffer from distention. Only one out of four cases need morphia, if they are given atropine and eserine on the table as indicated above. It is rarely necessary to repeat the dose.

Craig found that repeated doses of eserine caused distention. It should only be repeated when indicated and the salicylate alone should be used. We have not seen a case of paralytic ileus that

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was not relieved by atropine and eserine. Before we learned to administer the drug properly, we were often called in the middle of the night, after all kinds of enemas had failed and have given atropine and eserine, followed by an alum enema, with relief of the ileus. Our patients are not worn out with gas pains, one reason, they want to get out of bed early. A patient who has been given atropine and eserine salicylate, on the table, has a flat abdomen the next day. If there has been much hemorrhage, tap water is given by the rectum immediately after the operation. If hemorrhage is accompanied by shock, whiskey and hot coffee are given in the enema. Morphia is given to combat shock and to relieve pain. It is the best heart stimulant we have but should not be given after twenty-four hours. If the patient has pain twenty-four hours after the operation, if due to gas, it is relieved by atropine and eserine and an alum enema. If the pain is not due to gas, it is generally relieved by a hot water bag to the abdomen and aspirin. Vomiting generally stops after a couple of large glasses of water have been given, the patient washing out her own stomach. Some cases of persistent vomiting, without apparent cause, are the result of a nervous reflex, and are relieved by spirits of chloroform, 10 drops in a teaspoonful of rhubarb and soda mixture every fifteen minutes. Even if this is vomited, a little of the spirits of chloroform is absorbed each time; this acts as a sedative, and the rhubarb and soda neutralize the acidity of the stomach. In these cases cold compresses are applied to the throat and a mustard plaster to the epigastrium.

If there is postoperative dilatation of the stomach, as shown by the vomiting of large amounts of greenish fluid, and distention of the epigastrium, the pharynx is sprayed with a 2 per cent. solution of cocaine, the patient is allowed to swallow a little of the solution; and the stomach may be washed out. After this the patient is allowed but small quantities of water, with 10 drops of lemon-juice to half an ounce, to relieve thirst. Catheterization is not allowed, unless it is impossible for the patient to pass urine voluntarily. The patient may go the first twelve hours before the catheter is used. Pituitrin, 1 c.c., is given when the bladder is full. This is followed in fifteen minutes by an enema. When the rectum is emptied, the bladder is frequently emptied at the same time. Pituitrin is frequently successful in these cases. Sterile urine will not hurt the perineum, but the catheter will hurt the bladder.

Diet.—It is not necessary to feed the patient unless she is hungry. As soon as awake she may be given water, or lemon and water, or tea, or soup, or buttermilk. No milk is given until after

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the bowels have moved as it is harder to digest than beefsteak and causes intestinal distention. Ice cream, however, is often grateful to the patient. Cereals and cream, eggs, custard, stale bread, or toast, and scraped beef may be given as soon as desired. After the bowels have moved, a full diet is given. Patients are allowed to move about at will, sit up in bed, and get out of bed into a chair. As soon as vomiting stops, tincture of nux vomica 10 drops before meals, and hydrochloric acid dilute 10 drops after meals, are given. We find the patients eat more, if these drugs are thus administered. The bowels often move on the second day, or as soon as the patient begins to eat and moves about. No cathartic is given unless indicated. If the patient feels distended and the bowels will not move, she is given an enema, and allowed to sit up. If there is a slight temperature and coated tongue, castor oil is given, if she can take it; if not, calomel, followed by a saline, may be administered.

Early Mobility.—The patient is permitted to move at will as soon as she awakens. From the second to the fifth day, depending on the feelings of the patient, if the temperature is below 101°F. and the pulse below 100, she is helped out of bed into a wheel chair and is allowed to sit up until tired; usually half an hour to an hour. Thereafter she may sit up longer. Just as soon as she feels able, she is allowed to walk a short distance. Patients treated in this way gain strength quickly, and, by the end of the first week, are able to walk around the ward, and are allowed to go home on the eighth or tenth day. When they go home, they are instructed not to fatigue themselves, but to be up and down as comfort may demand. It is wonderful how quickly they gain strength. Two weeks after the operation they are walking around as if they have never seen a hospital. Our patients are told, before going to the hospital, they will be out of bed before the fifth day and able to go home by the eighth or tenth. If suppuration occurs, they are put back to bed until the temperature is normal. With the Pfannenstiel incision the wound heals quickly. There is no tension on the wound. We have never had a hernia in the transverse incision. If suppuration occurs a small opening is made, the cavity filled with enzymol, 1 part to 4 parts of water, and dressing wet with the same solution is applied. Enzymol will clean the wound in two or three days. All pus disappears in that time. Bier's cup is then used, with balsam of Peru in the wound, to stimulate the healing.

In 50 radical hysterectomy operations the patients were out of bed on the 5th day; out of the hospital on the 14th day. In 320 supravaginal hysterectomies, for pyosalpinx, 125; for fibroids, 172; for

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ovarian cysts, 17; for ectopic gestation, 6; the patients were out of bed on the 4th day; out of the hospital on the 10th day. Three hundred forty-seven salpingectomies were out of bed the 3d day; home, the 9th day. One hundred three ovariotomies were out of bed the 4th day; home, the 9th day. One hundred seventy operations for retroversion uteri were out of bed the 3d day; home, the 8th day. One hundred twenty appendectomies were out of bed the 4th day; home, the 8th day. Sixty-five herniotomies were out of bed the 5th day; home, the 12th day. Fifty gall-bladder cases were out of bed the 5th day; home, the 10th day. Forty-seven cystocele and perineal operations were out of bed the 4th day; home, the 9th day. Forty-five vaginal sections were out of bed the 4th day; home, the 10th day. Forty-nine vaginal hysterectomies were out of bed the 4th day; home, the 10th day. Fifty-five vaginal fixations for cystocele and prolapse were out of bed the 5th day; home, the 11th day. Forty-nine operations on stomach and intestines were out of bed the 4th day; home, the 12th day. Thirty kidney operations were out of bed the 5th day; home, the 10th day. Seven exploratory operations were out of bed the 4th day; home, the 10th day. Two ligation of internal iliac for cancer were out of bed the 6th day; home, the 14th day. In all 1500 operations with 24 deaths.

The 24 deaths occurred in Wertheim operation, 6; heart complications, 4; delirium tremens, 1; general peritonitis, 2; uterine fibroids, 2; acute indigestion and fatty heart, 1; acute dilatation of the heart, 1; supravaginal hysterectomy for pyosalpinx, 2; sepsis, 1; pneumonia, 1; salpingectomy, 1; hematoma sepsis, 3; cystocele, 1; peritoneal cysts, 1; intestinal obstruction, 1; tubercular peritonitis, 1; vaginal section for eclampsia, 1; retroversion, 2; cancer of the stomach, 1; kidney, 2; vaginal hysterectomy for prolapse, 1; acute diverticulitis, 1; acute appendicitis, 1; umbilical hernia, 1.

There were 53 skin infections: 1 retroversion uteri was out of bed the 4th day; home, the 20th day; 1 carcinoma of the ovaries was out of bed the 9th day; home, the 14th day; 3 hysterectomies for cancer were out of bed the 5th and 4th days; home, the 14th, 18th and 19th days respectively; 1 ligation of internal iliacs was out of bed the 7th day; home, the 14th day; 6 pyosalpinx were out of bed the 2d, 4th, 3d and 11th days; home, the 8th, 11th, 14th and 17th days; 5 appendicitis cases were out of bed the 2d, 3d, 4th, 7th, and 14th days; home, the 10th, 14th and 20th days; 4 hysterectomies for fibroids were out of bed the 3d, 5th and 15th days; home, the 10th, 13th and 24th days; 4 salpingitis were out

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of bed the 3d, 4th, 8th and 9th days; home, the 9th, 16th and 17th days; 6 gall-bladder cases were out of bed the 2d, 3d, 5th, 7th and 8th days; home the 8th, 10th, 14th and 21st days; 4 umbilical herniæ and lipectomies were out of bed the 4th, 8th and 14th days; home, the 9th, 17th, 23d and 24th days; 1 postoperative ventral hernia was out of bed the 16th day; home, the 21st days; 1 ulcer of the stomach was out of bed the 4th day; home, the 14th day; 1 laparotomy for infected dermoid was out of bed the 4th day; home, the 14th day; 1 laparotomy for ovarian abscess was out of bed the 10th day; home, the 12th day; 1 laparotomy for dermoid cysts was out of bed the 4th day; home, the 15th day; 1 pelvic abscess, fibroids and pyosalpinx, was out of bed the 14th day; home, the 21st day; 1 infected sinus, due to gauze swab in the fat, was out of bed the 4th day; home, the 10th day; 1 postoperative peritonitis, following salpingitis, was out of bed the 10th day; home, the 20th day; 2 vaginal hysterectomies, for prolapse, were out of bed the 7th and 12th days; home, the 14th day; 2 vaginal fixations for cystocele were out of bed the 5th and 10th days; home, the 10th and 14th days; 2 vaginal sections and perineums were out of bed the 5th and 7th days; home, the 10th and 14th days; 1 appendicitis and pelvic abscess was out of bed the 10th day; home, the 21st day; 2 cystoceles and perineums were out of bed the 5th and 7th days; home, the 11th and 14th days; 1 fecal fistula and hysterectomy for pyosalpinx was out of bed the 21st day; home, the 36th day; 20 cases of hematomata in the wound were out of bed the 3d to 12th days; home, the 18th to 27th days.

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IN MEMORIAM

JAMES ROY FREELAND, M. D.

BY

DR. CHARLES B. SCHILDECKER,

Pittsburgh, Pa.

JAMES ROY FREELAND, born in 1883, received the degree of Doctor of Medicine from the University of Pennsylvania in 1904. After an interneship of two years at the German Hospital of Philadelphia he was appointed Clinical Clerk at the Rotunda Hospital in Dublin, Ireland. At the conclusion of his clerkship he took the degree of Licentiate of Midwifery and shortly after was appointed Assistant Master by Dr. E. Hastings Tweedy, the then Master of the Rotunda. He was the only non-British subject who had held this position up to that time and remained in this post for two years. His duties in this position included lectures and quizzes to doctors and nurses in attendance at the Rotunda. He was very popular in this capacity because of his ready wit which rendered his lectures interesting and assured the attention of his hearers. He was a Member of the Royal Academy of Medicine of Ireland, and the British Medical Association.

In 1912 he returned to this country and was appointed Obstetrician to the Western Pennsylvania Hospital of Pittsburgh, Pa. At the Buffalo meeting of the American Association of Obstetricians and Gynecologists held in 1914, he was elected a member of this association. He was a member of the American Medical Association and a Fellow of the American College of Surgeons.

During his career in Pittsburgh he made an enviable record as an obstetrician, for in addition to his professional skill he had the ability to make and hold friends.

He contracted pneumonia late in May, 1917 and died on the twenty-ninth of May. His untimely end was deeply regretted by his professional associates and numerous friends and patients.

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JAMES ROY FREELAND, M.D.

BORN, 1883. DIED, MAY 29, 1917.

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